DCON Utility

User's Manual

Version 1.1, April 2006

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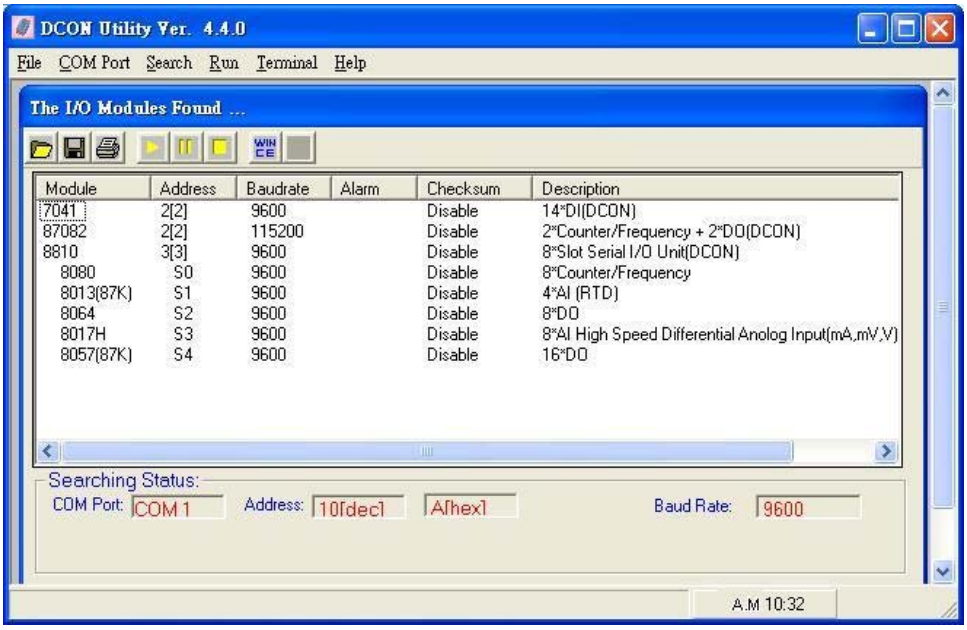
Chapter1. Introduction

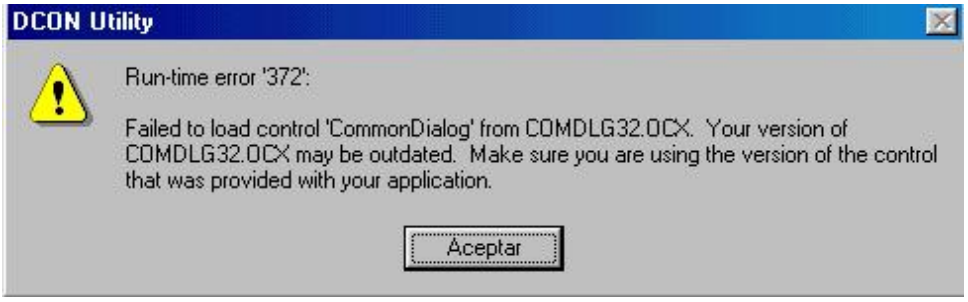
The DCON Utility is a toolkit that help user to search the network, easily to configure and test the I/O modules via the serial port (RS-232/485) or Ethernet port (using virtual com port). It also helps to configure the i-87K I/O modules on WinCon 8000 system. It support not only the DCON Protocol I/O modules but also the M Series I/O Modules (Modbus RTU M-7K,M-87K and will support Modbus ASCII M-87K in the future).


DCON Utility Ver. 4.4.0
File COM Port Search Run Terminal Help
The I/O Modules Found ...
Module Address Baudrate Alarm Checksum Description
7041 2[2] 9600 Disable 14*DI(DCON)
87082 2[2] 115200 Disable 2*Counter/Frequency + 2*DO(DCON)
8810 3[3] 9600 Disable 8*Slot Serial I/O Unit(DCON)
8080 S0 9600 Disable 8*Counter/Frequency
8013(87K) S1 9600 Disable 4*AI (RTD)
8064 S2 9600 Disable 8*DO
8017H S3 9600 Disable 8*AI High Speed Differential Anolog Input(mA,mV,V)
8057(87K) S4 9600 Disable 16*DO
Searching Status:
COM Port: COM 1
Address: 10[dec] A[hex]
Baud Rate: 9600
A.M 10:32

For DCON Utility version information and supported module list, please refer to
ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/driver/dcon_utility/
CD:\ Napdos\Driver\DCON_Utility

To update the DCON Utility, please refer to
ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/driver/dcon_utility/setup/

Note: When installed the DCON Utility, sometimes there will be a problem to cause a Run Time Error Message as below.


DCON Utility
Run-time error '372':
Failed to load control 'CommonDialog' from COMDLG32.OCX. Your version of COMDLG32.OCX may be outdated. Make sure you are using the version of the control that was provided with your application.
Aceptar

The error cause by the different version of ocx, there is another copy at the system32.
1. Please find the ocx file in system32 and backup the ocx to another folder.
2. Copy the ocx that in the DCON Utility installed path to system32.
3. Run the DCON Utility again.

Chapter2. The Wirings of I/O modules

Before searching the I/O, make sure the I/O modules are correctly wired, the basic wiring includes **power supplier** and **communicate interface**.

2.1 Power Supplier:

ACE-540A

DIN-540A

Please refer to: http://www.icpdas.com/products/Accessories/power_supply/power_list.htm

1. The power supply must be **DC power between +10V to +30V**.

2. Wiring: **+Vs connects to +Vs**; **GND connects to GND**.

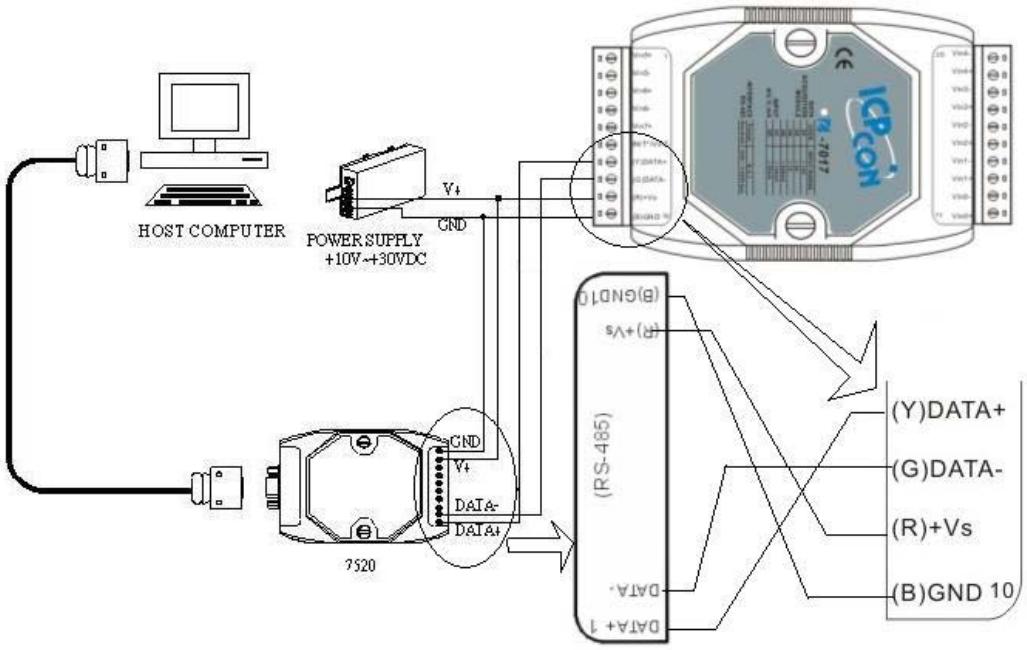
3. Carefully calculate the total watts or current consumption of the system.
   If the total watts were not enough, the system will become unstable and abnormal.

Total watts = Σ(supplied Voltage)*(Ampere consumed)

2.2 Communicate Interface:

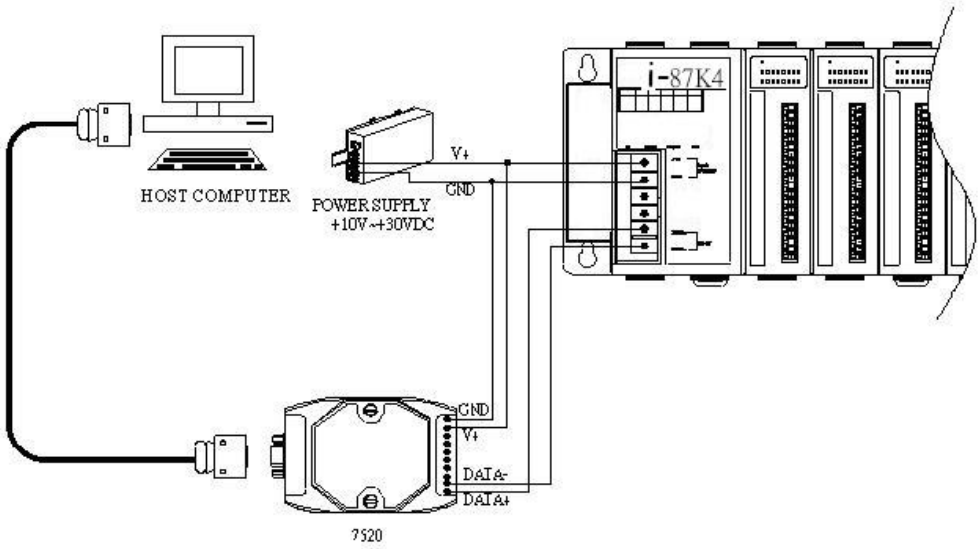
2.2.1 i-7000 and M-7000 series:

i-7000 I/O modules and M-7000 I/O modules are typical distributed remote I/O modules and support only **RS-485** interface.



2.2.2 i-87K I/O Expansion with i-87K and M-87K series I/O modules:

The only communication interface of i-87K I/O Expansion is its **RS-485 port**. i-87K I/O Expansion unit is a convenient and compact plastic housing which only equipped one power module, one RS-485 interface and several I/O slots. It is used to expand I/O modules via the RS-485 interface. Only i-87K and M-87K series I/O modules can plug in the unit.



2.2.3 i-8000 system with i-8K, i-87K series I/O modules:

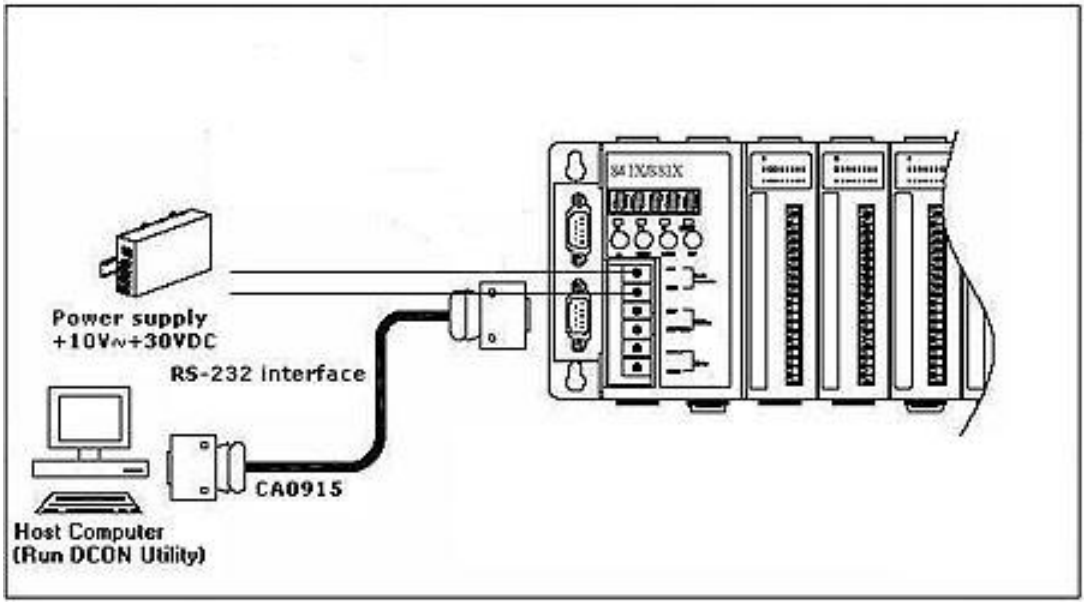
i-8000 system equipped several communication interfaces such as **RS-232**, **RS-485** and **Ethernet**.

The applications when applies to DCON Utility are those which with DCON Firmware running on i-8000 MCU unit. They are **DCON_nnn.exe** and **E10M_nnn.exe**. And i-8000 system supports both **i-8K** and **i-87K** I/O modules. The supported I/O modules are list at the page below:
ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/dcon/8410_8810/index.htm

Both **DCON_nnn.exe** and **E10M_nnn.exe** can use RS-232 interface.

- **RS-232 interface:**

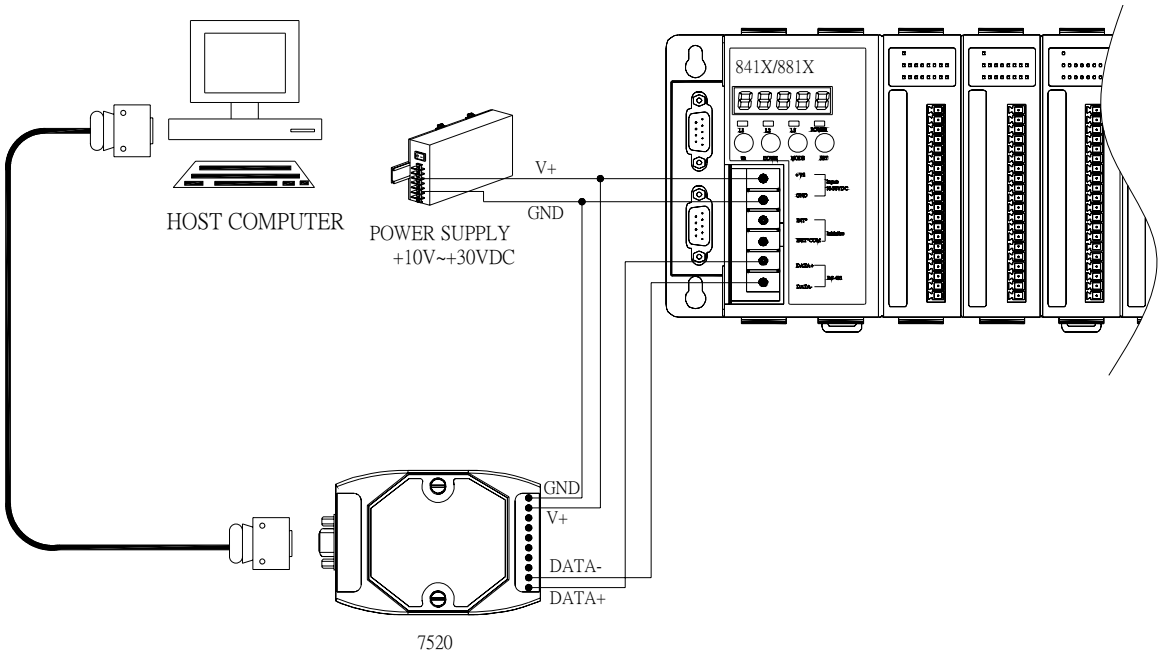
The RS-232 interface is seldom used in real application for the short transmitting distance of RS-232, it usually used in development stage to configure and test the I/O modules.



The 9-pin Male-Female D-sub cable CA-0915 please refer to**:**
http://www.icpdas.com/products/Accessories/cable/cable_selection.htm

2.2.4 i-8000 serial I/O unit with DCON_nnn.exe:

The default firmware of i-8410, i-8411, i-8810, i-8811 serial I/O unit is **DCON_nnn.exe.** DCON_nnn.exe supports both RS-232 (via COM1 port) and RS-485 (via COM2 port) interface of i-8000 system.



RS-485 Interface:

RS-485 is the most popular and basic communication interface in industry.

Generally, the host PC needs a **RS-232 to RS-485 converter** (i-7520) to convert the RS-232 electrical signal to RS-485.

Some industrial computers have RS-485 interface, they do not need i-7520 converter.

For more detail about the converter selection guide, please refer to:
http://www.icpdas.com/products/Industrial/communication_module/communication_list.htm

For using the i-7520, please refer to:
http://ftp.icpdas.com.tw/pub/cd/8000cd/napdos/7000/manual/7520.pdf

RS-485 network:

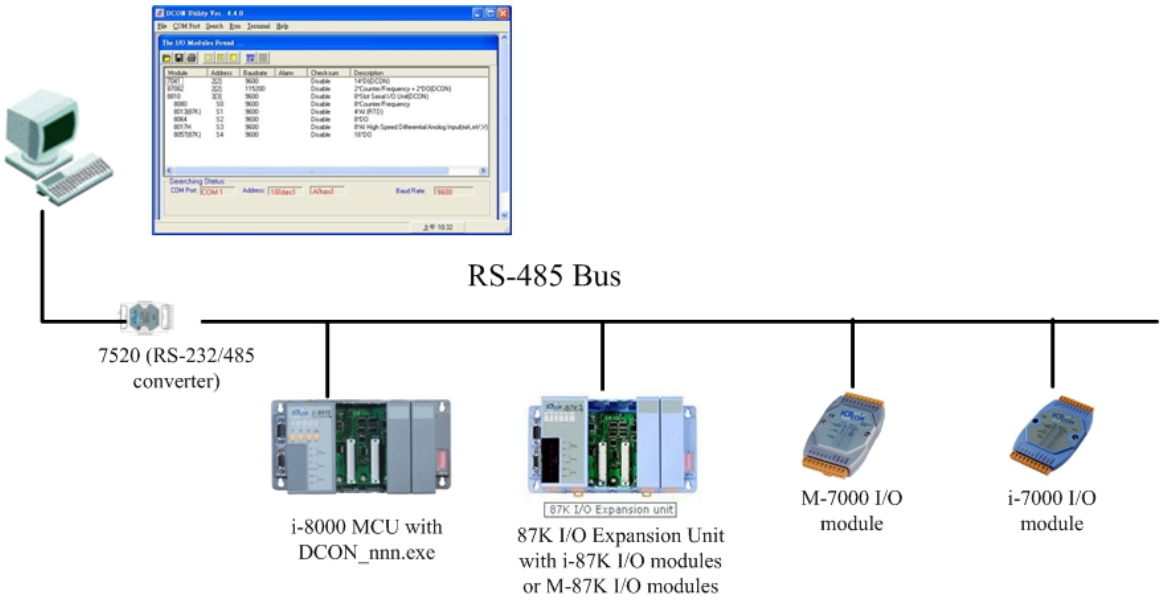

RS-485 Bus
7520 (RS-232/485 converter)
i-8000 MCU with DCON_nnn.exe
87K I/O Expansion unit
87K I/O Expansion Unit with i-87K I/O modules or M-87K I/O modules
M-7000 I/O module
i-7000 I/O module

Diagram 1 :DCON Utility can search the DCON protocol I/O modules and Modbus I/O modules via serial interface (RS-485 bus)

For RS-485 network wiring and configuration please refer to
ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/dcon/8410_8810/documents/ or
CD:\Napdos\DCON\8410_8810\Documents\
8410_8810_manual.pdf (Appendix C)

2.2.5 i-8000E Ethernet I/O unit with E10M_nnn.exe:

DCON Utility is a program using the COM port interface to communicate with I/O modules. The host PC has to install **VxComm utility** and **assigned a COM port to map the port I/O of i-8000 Ethernet I/O unit**. And the remote Ethernet I/O must support **XServer** to have the **virtual COM** port's function.

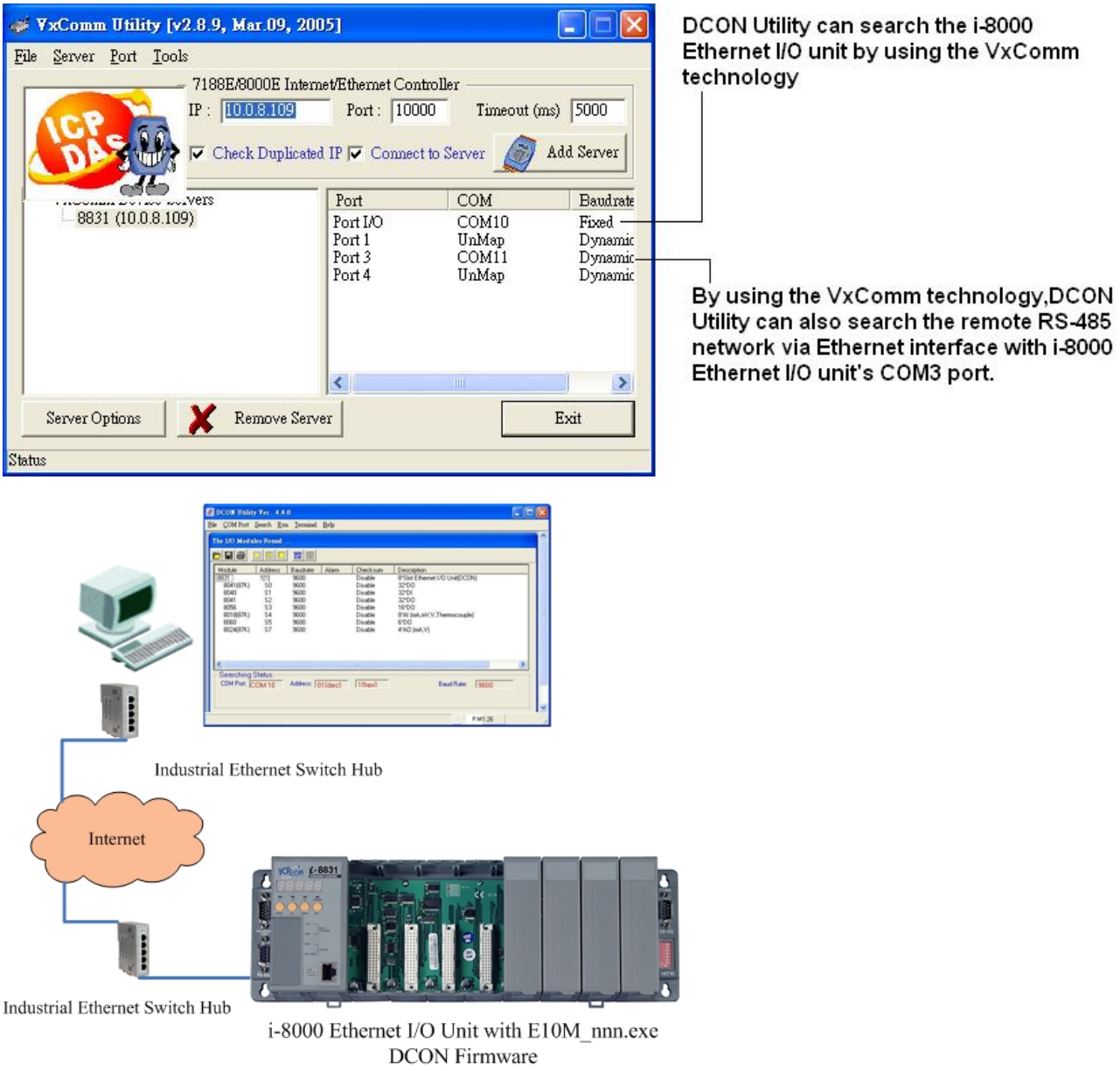
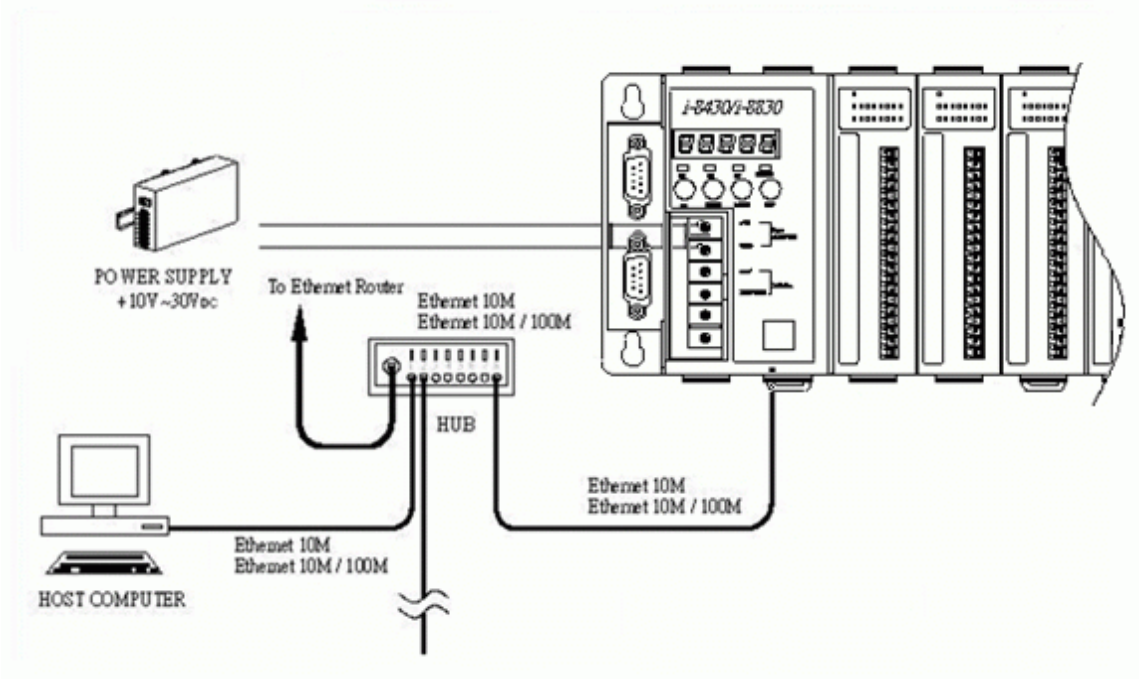

VxComm Utility [v2.8.9, Mar.09, 2005]
File Server Port Tools
7188E/8000E Internet/Ethernet Controller
IP : 10.0.8.109
Port : 10000
Timeout (ms) 5000
Check Duplicated IP
Connect to Server
Add Server
8831 (10.0.8.109)
Port COM Baudrate
Port I/O COM10 Fixed
Port 1 UnMap Dynamic
Port 3 COM11 Dynamic
Port 4 UnMap Dynamic
Server Options
Remove Server
Exit
Status
DCON Utility can search the i-8000 Ethernet I/O unit by using the VxComm technology
By using the VxComm technology,DCON Utility can also search the remote RS-485 network via Ethernet interface with i-8000 Ethernet I/O unit's COM3 port.
Industrial Ethernet Switch Hub
Internet
Industrial Ethernet Switch Hub
i-8000 Ethernet I/O Unit with E10M_nnn.exe
DCON Firmware

Diagram 2 :By using the VxComm technology, DCON Utility can search the DCON protocol I/O modules via Ethernet interface.

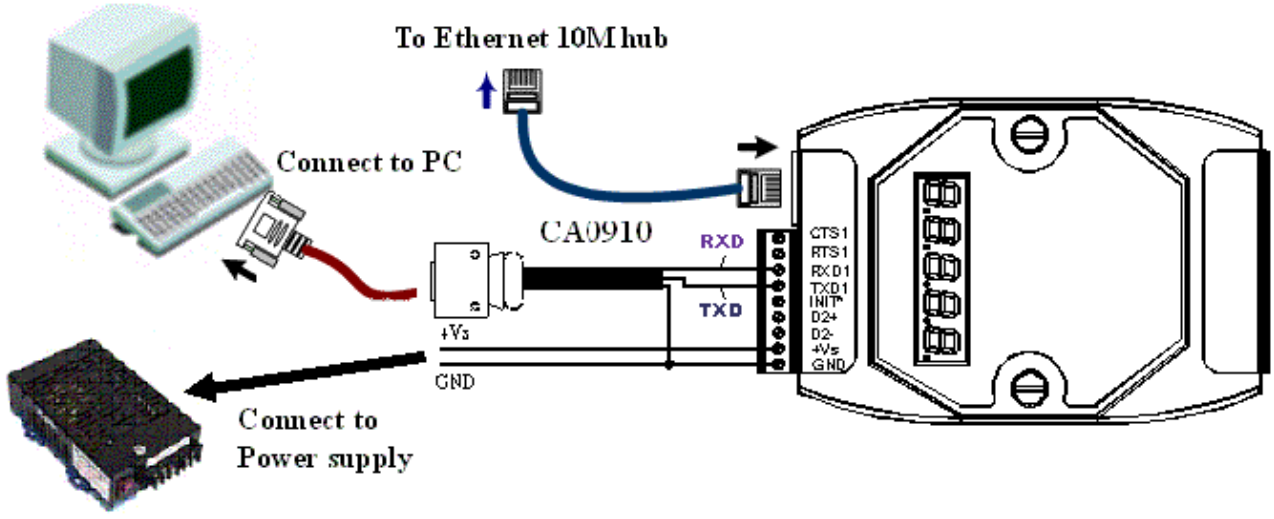
For VxComm technique, please refer to
ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/dcon/8430_8830/documents/ or
CD:\ Napdos\DCON\8430_8830\Documents
8430_8830_8KE4_8KE8_Manual.pdf (Chapter 2 and Chapter 3)

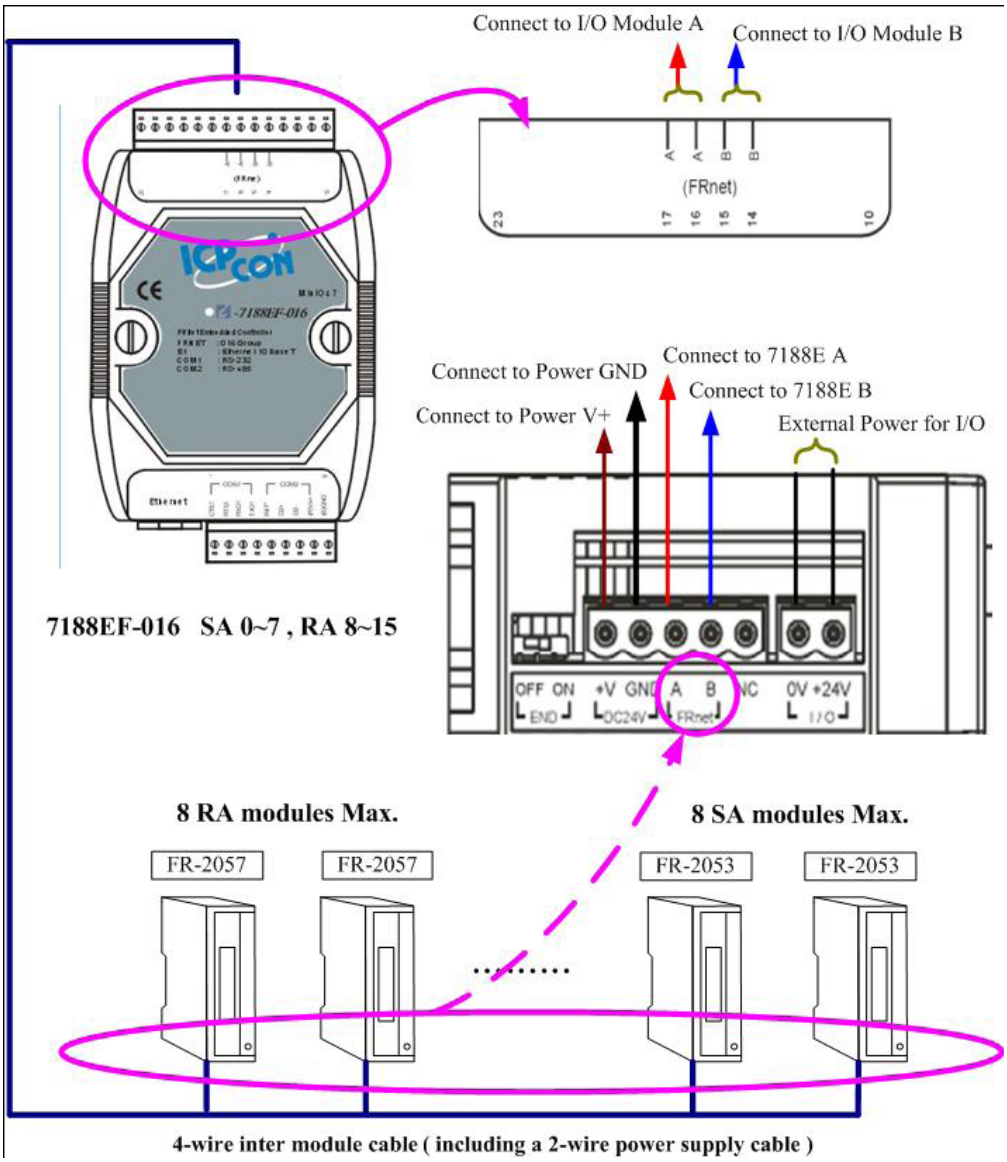
This application only applies to DCON Utility with DCON Firmware **E10M_nnn.exe** running on **i-8000 Ethernet I/O unit**.



2.2.6 i-7188EF-016 FR_Net with EF016nnn.exe:

This application only applies to DCON Utility with DCON Firmware **EF016nnn.exe** running on **i-7188EF-016 Ethernet I/O unit**.





For more detail about the 7188EF-016 and FR_Net I/O modules, please refer to ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/fr_net/7188ef/document/

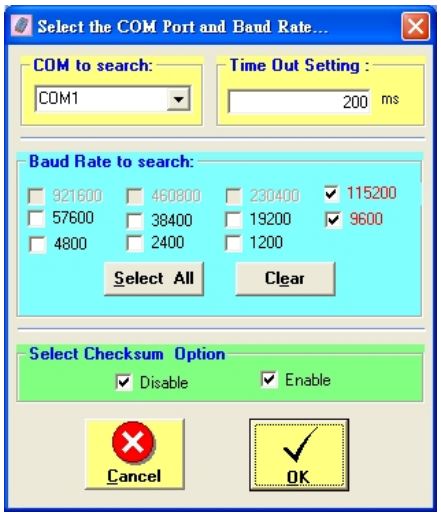
2.3 Search I/O with DCON Utility:

DCON Utility is a program based on Serial interface I/O, it can search **DCON Protocol** and **Modbus RTU Protocol** modules and support checksum disable and enable.

2.3.1 COM Port and Searching Conditions:

Step 1: Choose the COM port and select the searching parameters.

If user does not know the modules' communication baud rate or the network consists of I/O modules with different baud rates, it can choose multi baud rates, both checksum disable and enable condition for searching condition.



If the response may have many characters or the module use low speed baud rate, it is better to increase the timeout setting.

2.3.2 Search Rules:

If it is the first time to search and to configure the I/O modules, there are rules which can help to search and configure the modules.

1. **Search and configure the modules one by one.**

If there are several I/O modules with unknown Net Address, Baud rate, Checksum and Protocol, they have to be searched and configured one by one.

2. **Power on the module with INIT* connect to GND.**

If failed to find an I/O module, it is better to **Power on the I/O module with INIT* pin connects to the GND to get the I/O module's initial communication settings**.

Initial communication settings of 7000 series and 87K series are list at the table below.

	7000 series (i-7000 and M-7000)	87K series
Address	0	0
Baud rate	9600	115200
Checksum	Disabled	Disabled
Protocol	DCON Protocol	DCON Protocol

Note: The default settings and initial settings are different.

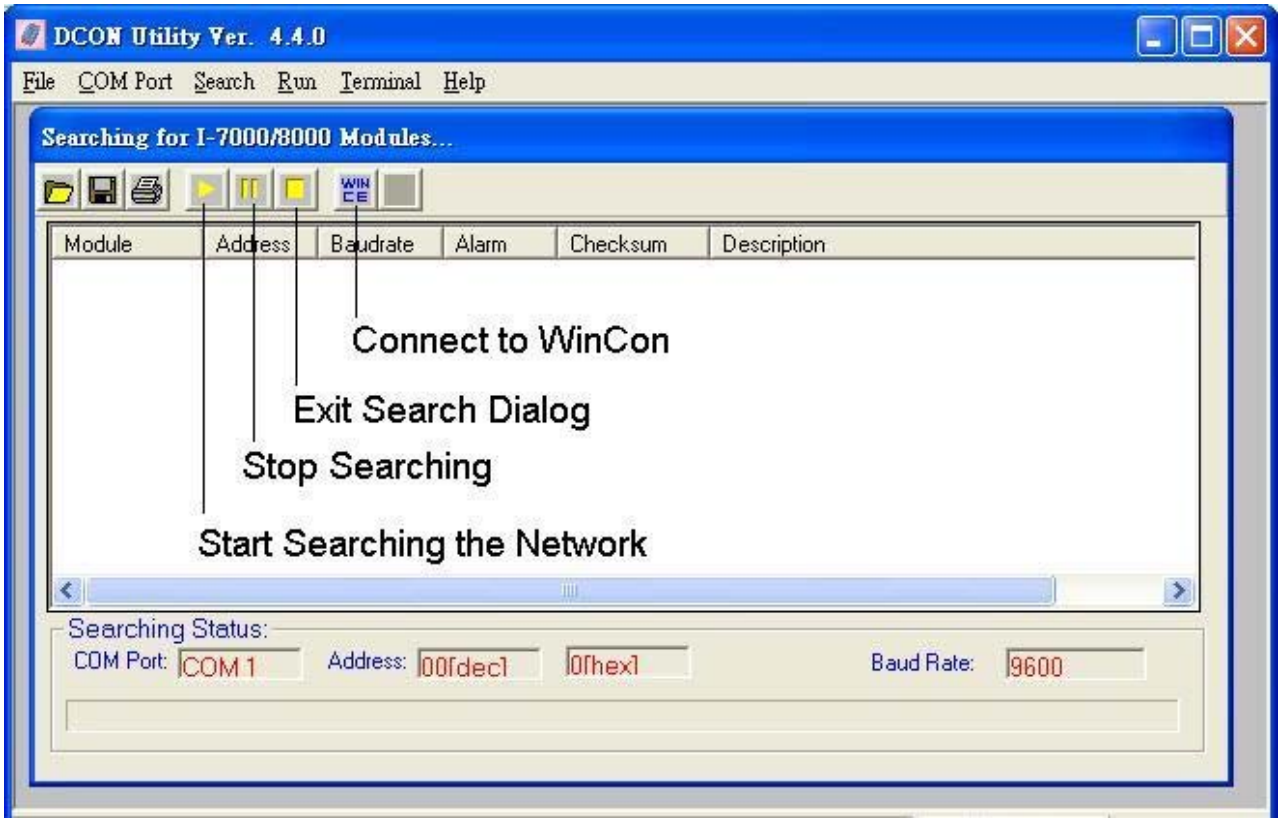
Default communication settings of i-7K, M-7K and 87K series are list at the table below.

	i-7000	M-7000	87K series
Address	1	1	1
Baud rate	9600	9600	115200
Checksum	Disabled	Not defined	Disabled
Protocol	DCON Protocol	Modbus Protocol	DCON Protocol

Note: i-8000 system can not power on with INIT* connect to INIT*COM to get the default communication setting, because when INIT* connect to INIT*COM, the firmware can not be auto executed by the MiniOS7.

If the wirings are correctly connected and communication parameters are correct too.

Clicks to start searching.



Chapter3. Configure I/O modules with DCON Utility

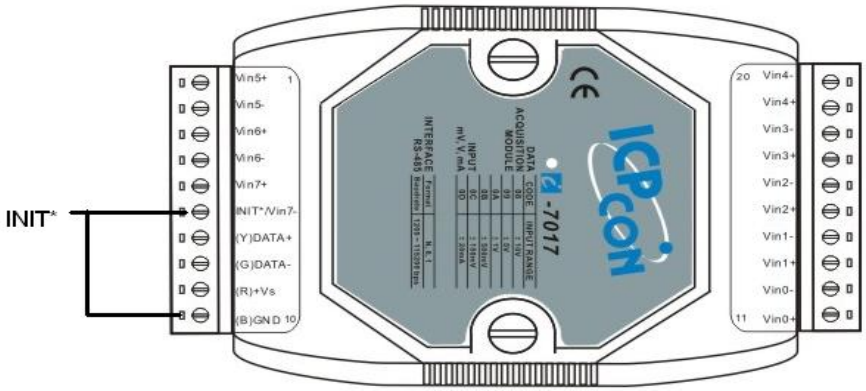
3.1 To Configure i-7K, M-7K and i-87K I/O modules:

There are DCON Protocol and Modbus Protocol I/O module, for most general settings, they need to choose the wanted property and click setting to make it effect.

3.1.1 Change Baud rate, Checksum and Protocol:

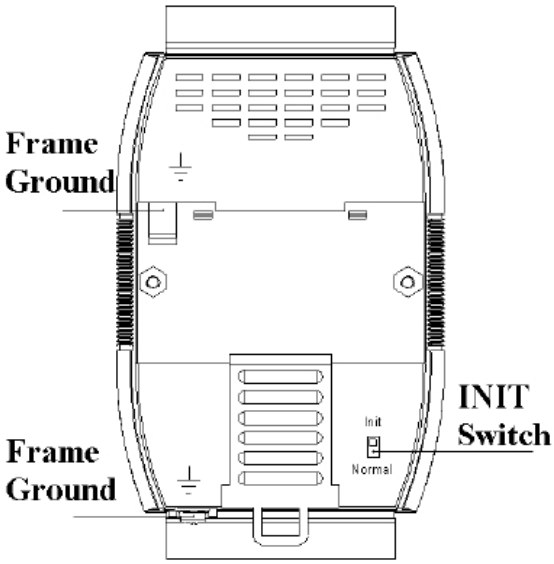
If attempted to change the Baud Rate, Checksum and Protocol, the **INIT* pin needs to connect to GND**. After successfully configuring these properties, the I/O modules must be **reset the Power** to bring the settings into effect.
There are some types of INIT* and they are at different position.

- Old style INIT* pin of 7000 series:



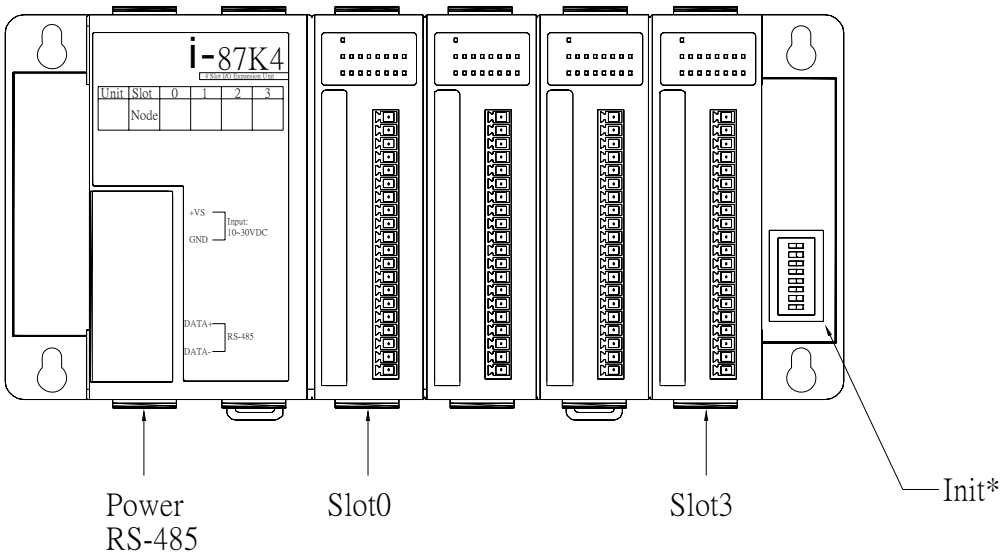
<u>The old style of INIT* needs to use a wire to connect to the GND</u>

- New style INIT* pin of 7000 series:



<u>The new style of INIT* pin is a dip switch and located at back side.</u>

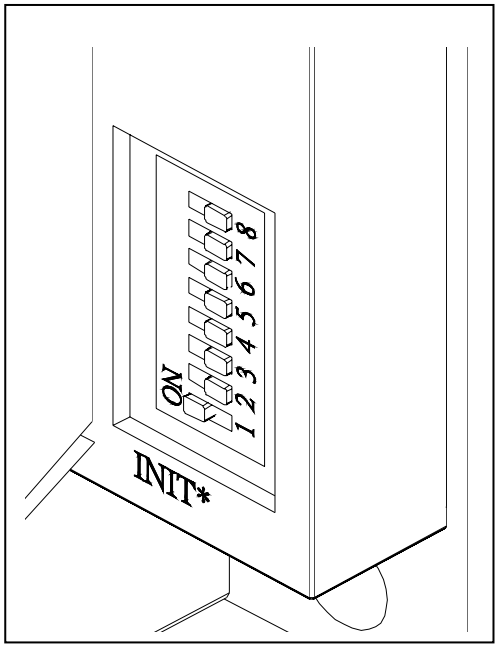
- i-87K1, i-87K4, i-87K8 I/O Expansion:



The INIT* pins of Slot0 to Slot7 are located at the right edge of i-87K I/O Expansion.

Note1: When power on i-87K I/O Expansion, only one INIT*-Switch can be set to ON (INIT* pin connects to GND) at the same time.

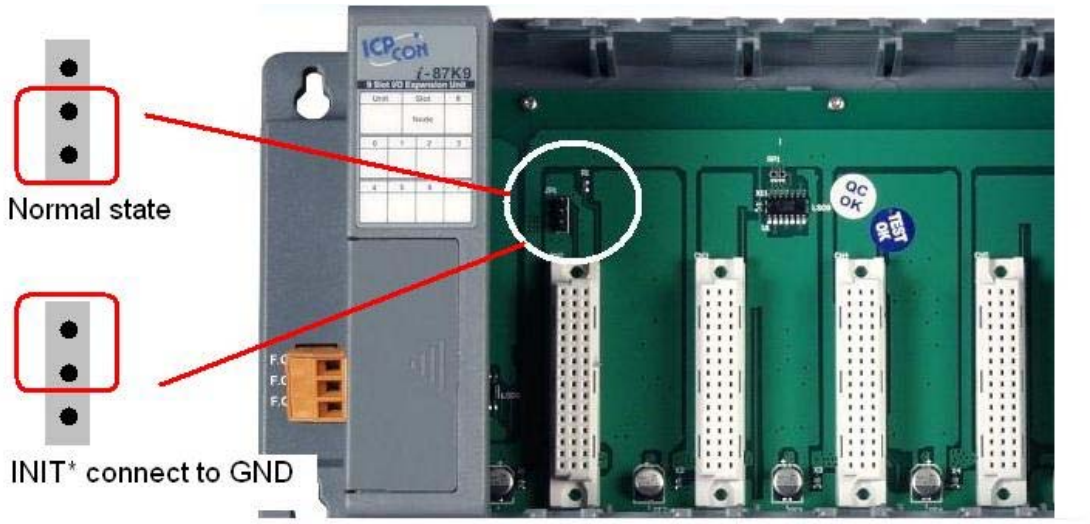
The table below shows how to map the INIT* pins to the slot I/O on i-87K I/O Expansion.



i-

	1	2	3	4	5	6	7	8
Slot-0=INIT*	**ON**	Off	Off	Off	Off	Off	Off	Off
Slot-1=INIT*	Off	**ON**	Off	Off	Off	Off	Off	Off
Slot-2=INIT*	Off	Off	**ON**	Off	Off	Off	Off	Off
Slot-3=INIT*	Off	Off	Off	**ON**	Off	Off	Off	Off
Slot-4=INIT*	Off	Off	Off	Off	**ON**	Off	Off	Off
Slot-5=INIT*	Off	Off	Off	Off	Off	**ON**	Off	Off
Slot-6=INIT*	Off	Off	Off	Off	Off	Off	**ON**	Off
Slot-7=INIT*	Off	Off	Off	Off	Off	Off	Off	**ON**

Note2: The INIT* pin location of i-87K5 is at Slot4, and i-87K9 is at Slot8. The diagram below shows the INIT* pin location and how to use the jumper to short the INIT* to GND. If the module at this slot needs to connect the INIT* to GND, it will be better to do this job at another Slot

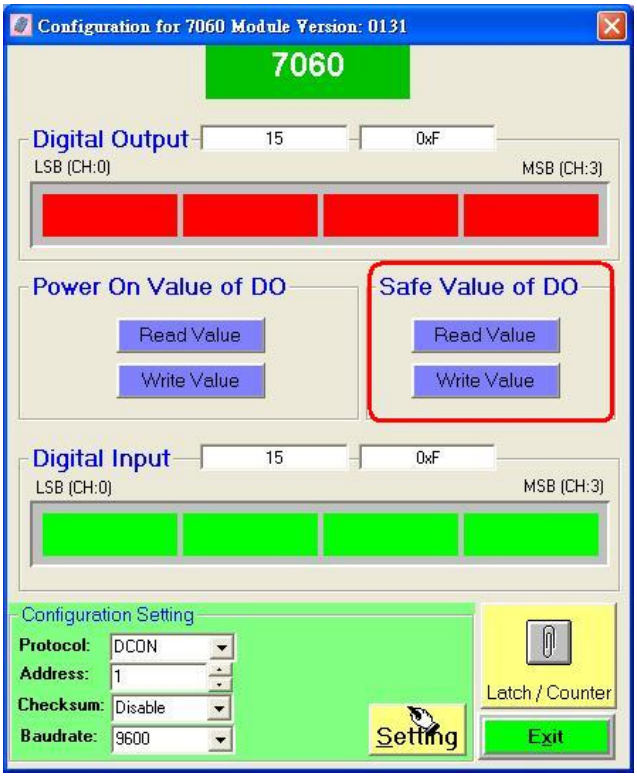


The location of INIT* pins are located at slot4 of i-87K5 and slot8 of i-87K9

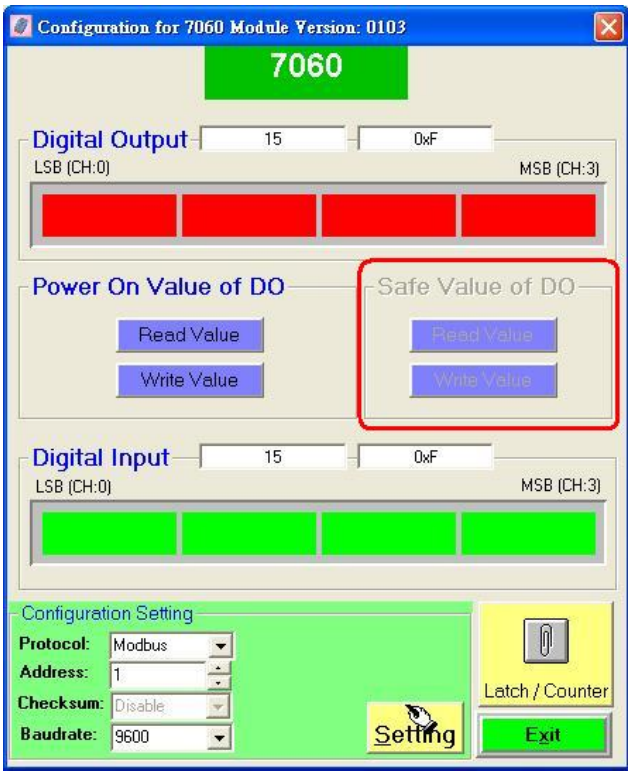
Note3: The Slot location (index of Slot) is not related to the Net Address of I/O modules, it only indicates the relative position of module on i-87K I/O Expansion.

3.1.2 To Configure Digital I/O modules:

The Modbus DO modules don't support safe value function, but the DCON modules do.



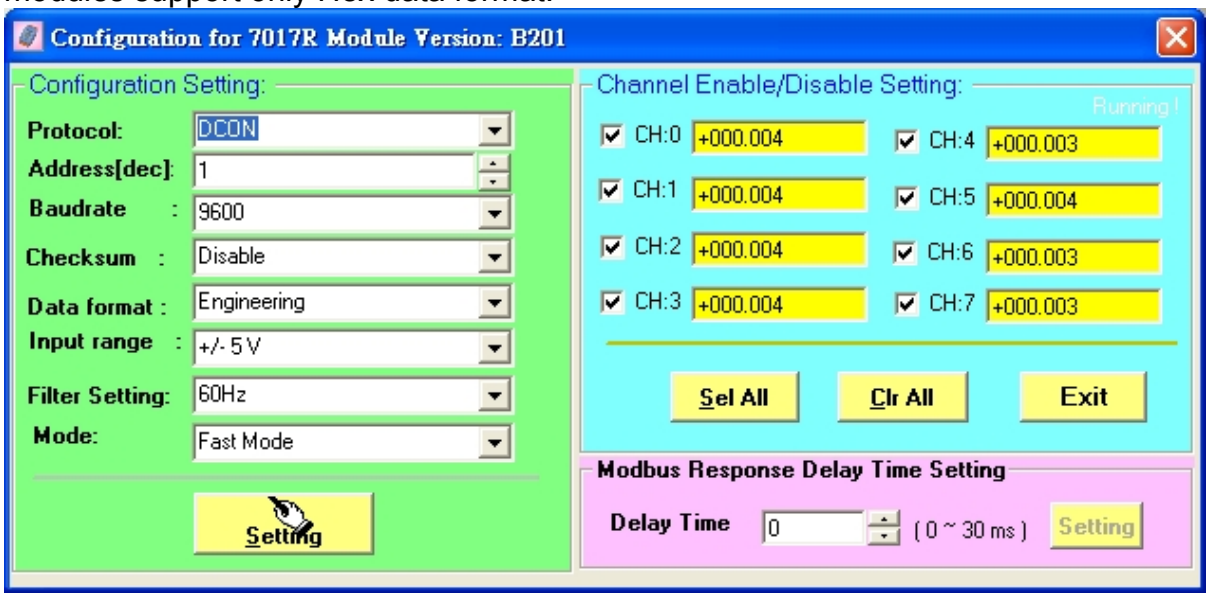
7060 is set to DCON Protocol.



7060 is set to Modbus Protocol.

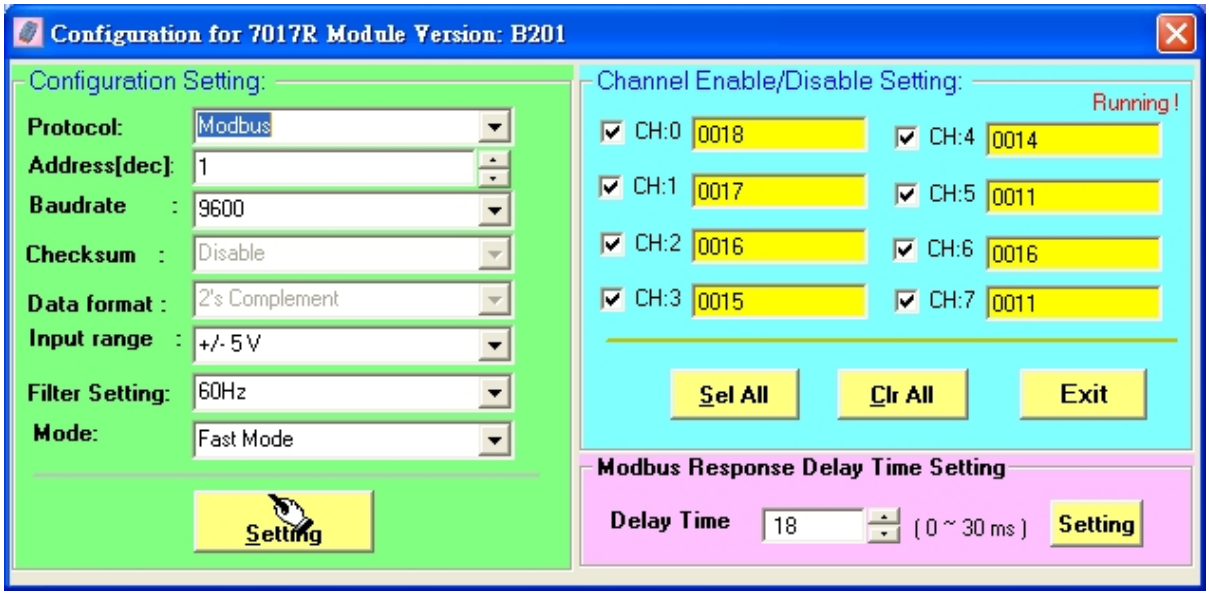
3.1.3 To Configure Analog Input modules:

The DCON modules support Engineering, Percent, Hex, Ohm data formats; the Modbus modules support only Hex data format.



7017R is set to DCON Protocol

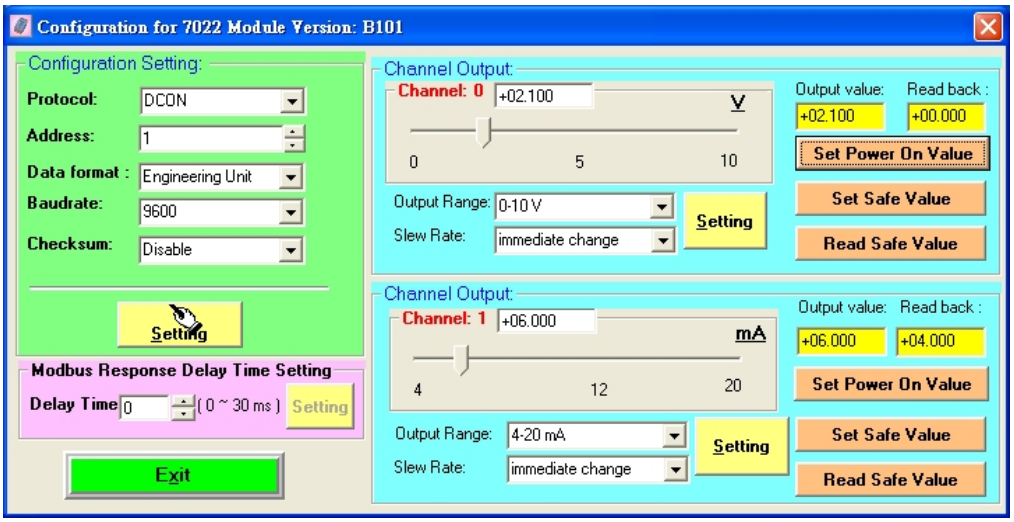
Sometimes the Modbus modules need to set the Modbus Response Delay time, For Modbus RTU mode, messages start with a silent interval of at least 3.5 character times, some PLC or SCADA software can not totally receive the response data from the Modbus modules for the quick response time.



7017R is set to Modbus Protocol

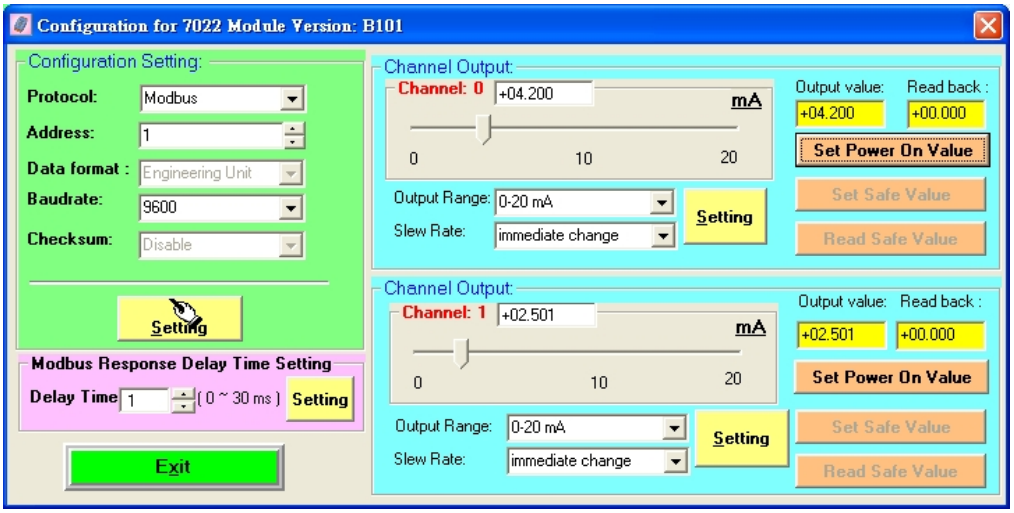
3.1.4 To Configure Analog Output modules:

The DCON AO modules support Engineering, Percent, Hex data formats; the Modbus modules support only Hex data format.



7022 is set to DCON Protocol

The modbus AO modules do not support the safe value function also.



7022 is set to Modbus Protocol

The differences between DCON modules and Modbus modules.

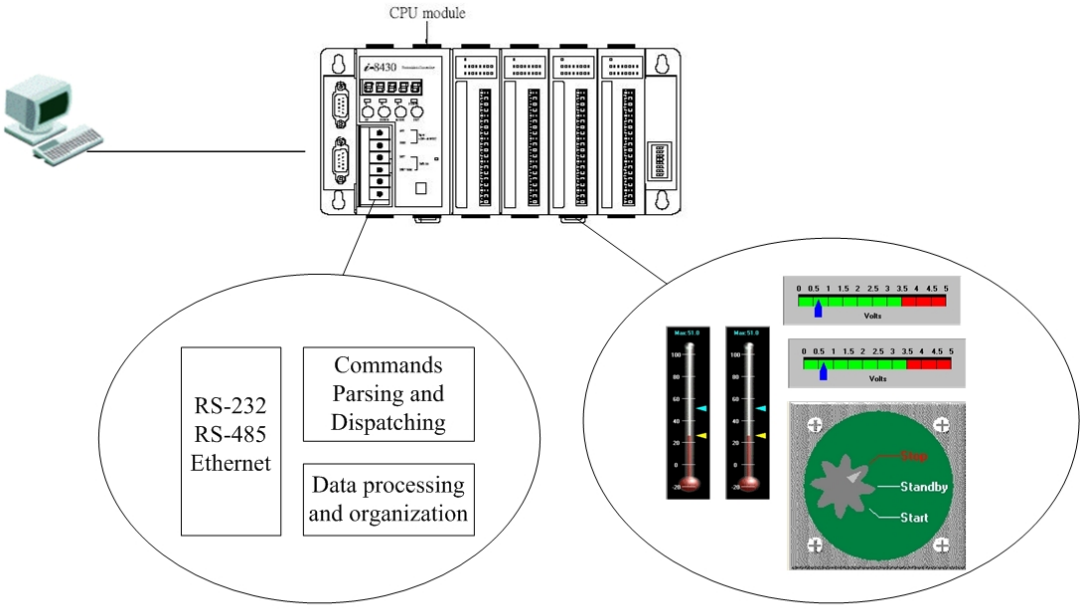
	DCON Protocol	Modbus
Checksum setting	Yes	No
Modbus response delay time	No	Yes
DO safe value	Yes	No
AO safe value	Yes	No
Data format(Engineering)	Yes (AI, AO)	No
Data format(Hex)	Yes (AI, AO)	Yes
Data format(Percent)	Yes (AI, AO)	No
Data format(Ohm)	Yes (RTD, Thermistor)	No

3.2 i-8000 system:

i-8000 system includes CPU module and the I/O modules on its slots.

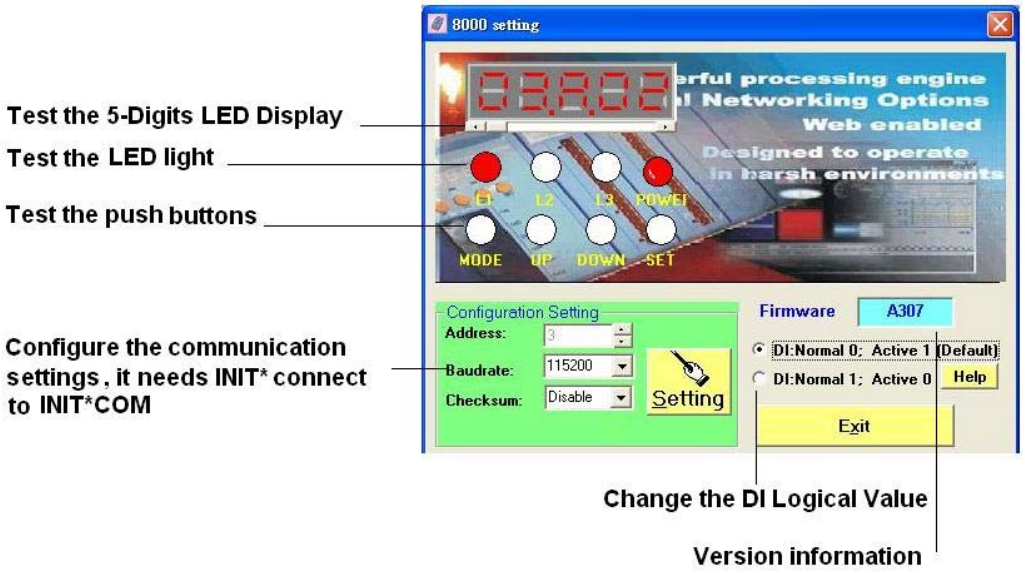
3.2.1 Configure the CPU module:

1. The CPU module is the communication and control center of i-8000 system.
2. DCON Utility communicates with this CPU module.
3. CPU module can get data from I/O modules.
4. CPU module can save the configuration settings of I/O modules.
5. CPU module can control the LED Display and Push Button function.

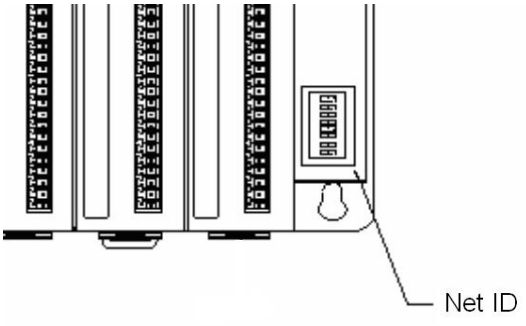


Access and Control the I/O module Digital and Analog Measurement

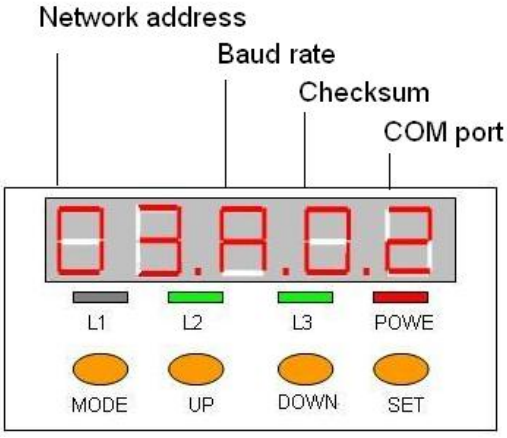
To configure the CPU module, the most important is to configure the **communication Settings** and **DI Active State Reverse** function.



i-8000 system's address is determined by the dip switch at the right edge of plastic housing.



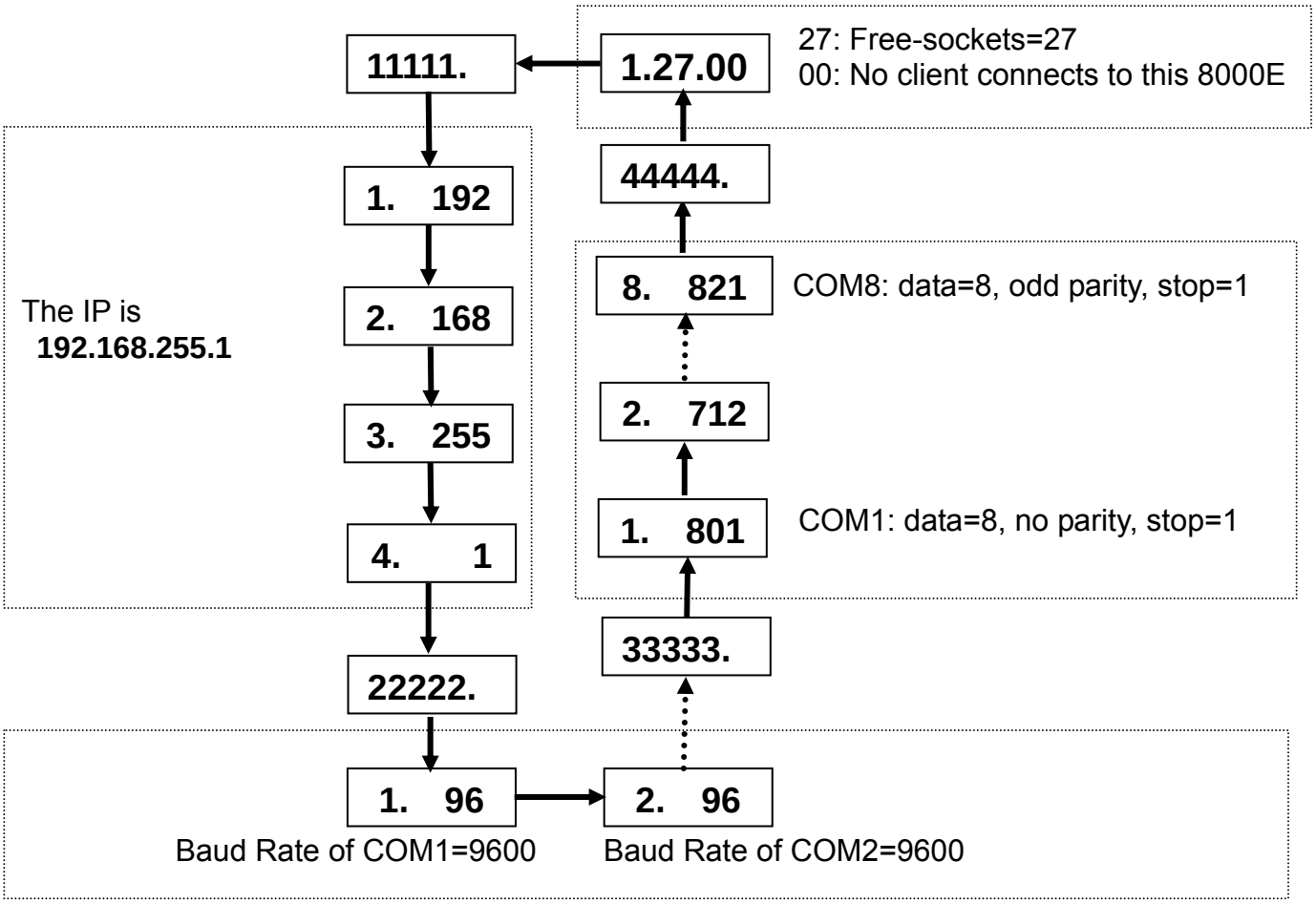
The **DCON_nnn.exe** will show the communication setting on the 5-digital LED menu.



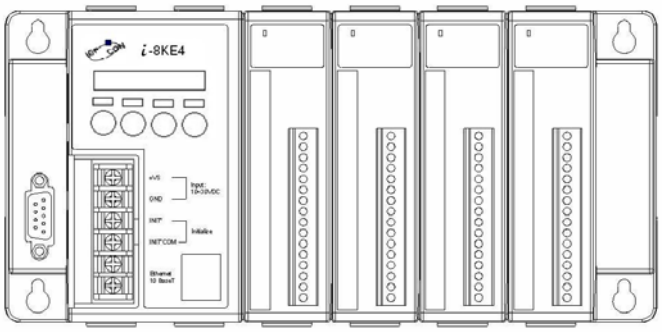
Baudrate Table:

0x3	0x4	0x5	0x6	0x7	0x8	0x9	0xA
1200	2400	4800	9600	19200	38400	57600	115200

For **E10M_nnn.exe**, the LED menu is controlled by XServer that constantly shows IP address, Baud Rate, Data Bit Format ..etc as following sequences.



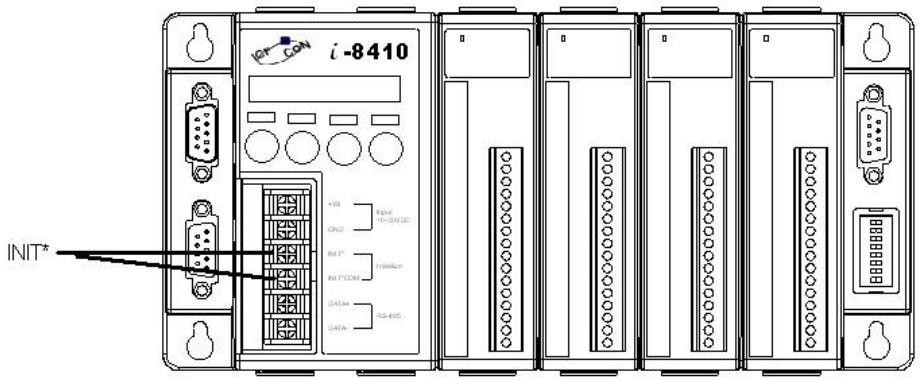
i-8KE4, i-8KE8 Ethernet I/O units do not have Net ID dip switch at the right edge of plastic housing, the **only address is 1**.



I-8KE4 and i-8KE8 series Ethernet I/O Unit

3.2.2 Change Baud rate and Checksum:

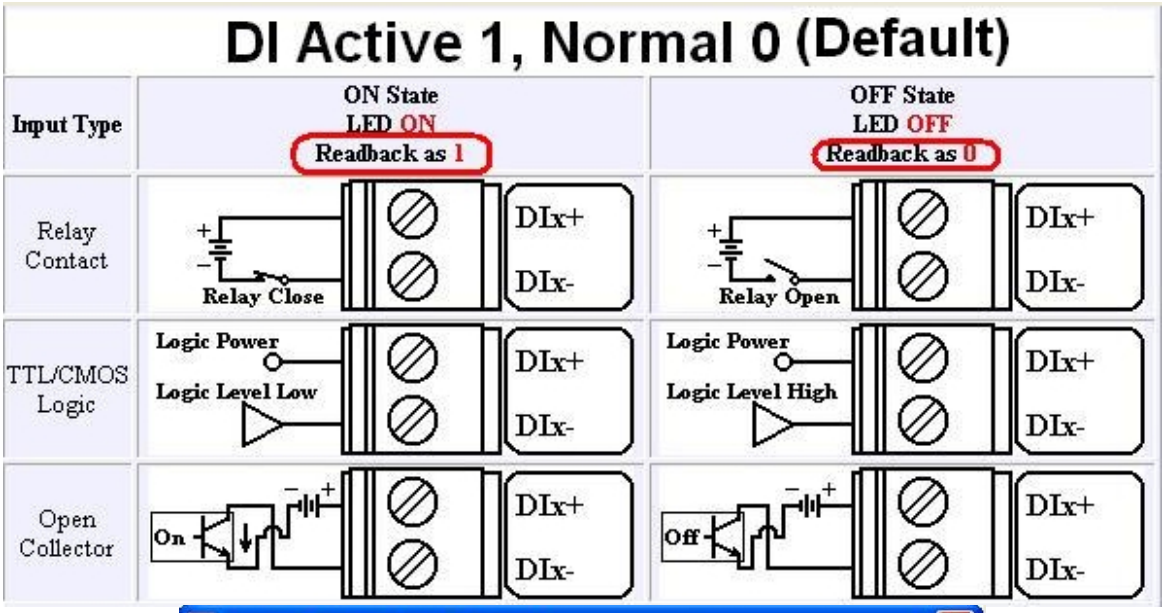
If attempted to change the Baud Rate, Checksum; **the INIT* pin needs to connect to INIT*COM**.
Note: There is no need to configure the Baud rate and checksum for I/O modules on slots.

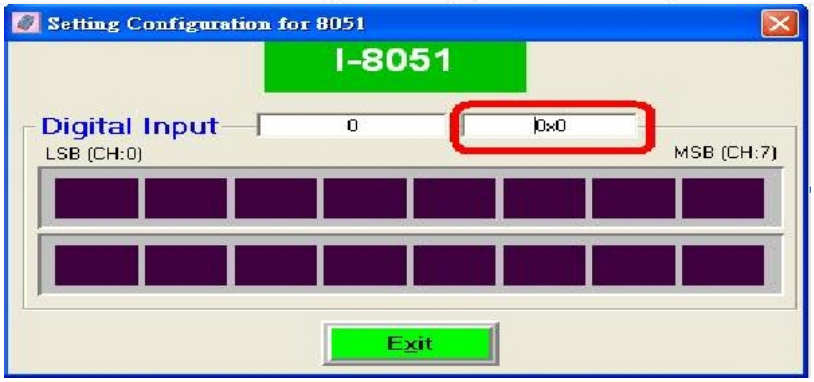


The INIT* pin position

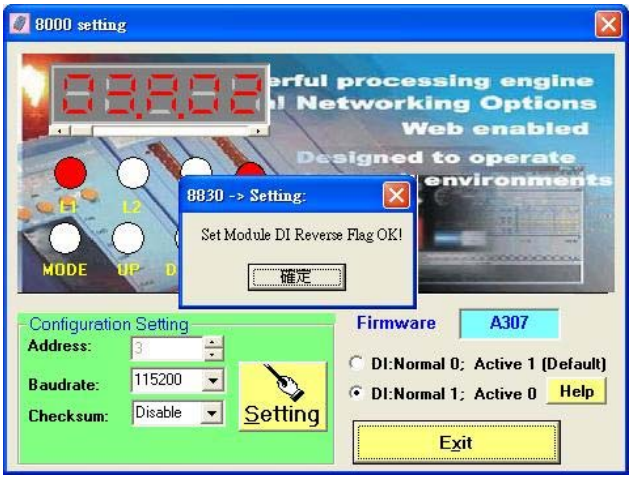
3.2.3 Change the DI Logical Value:

There are two applications about the DI signal. Default is “DI: Normal 0; Active 1”. When DI modules detect the input signal, the LED will be turned on (Green color) and will get logical value 1, otherwise the LED will be turned off (dark color) and get logical value 0.

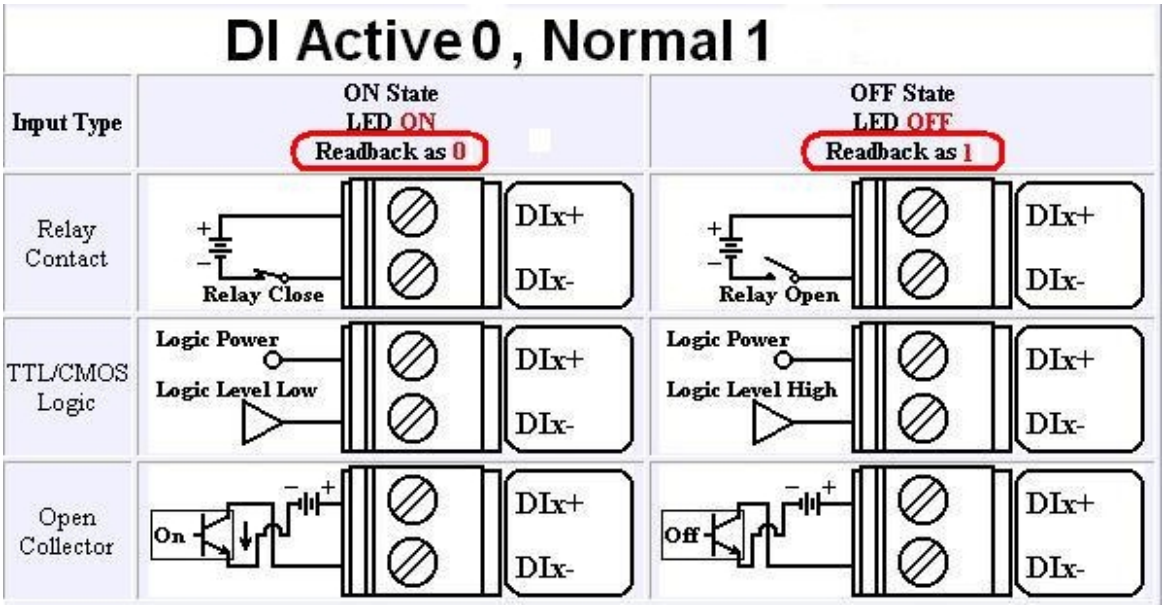


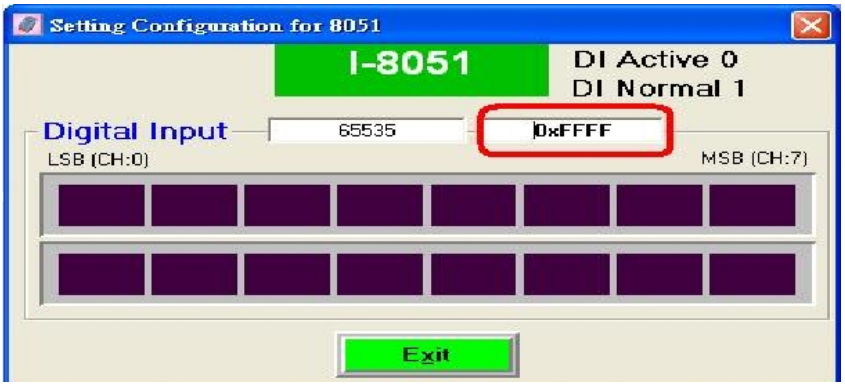


Choose the other “DI: Normal 1; Active 0” will reverse the Logical input value of DI modules.



In this case, when there is no DI input signal detected, the LED is off, but the logical value is 1; otherwise, the LED will be on and the logical value is 0.



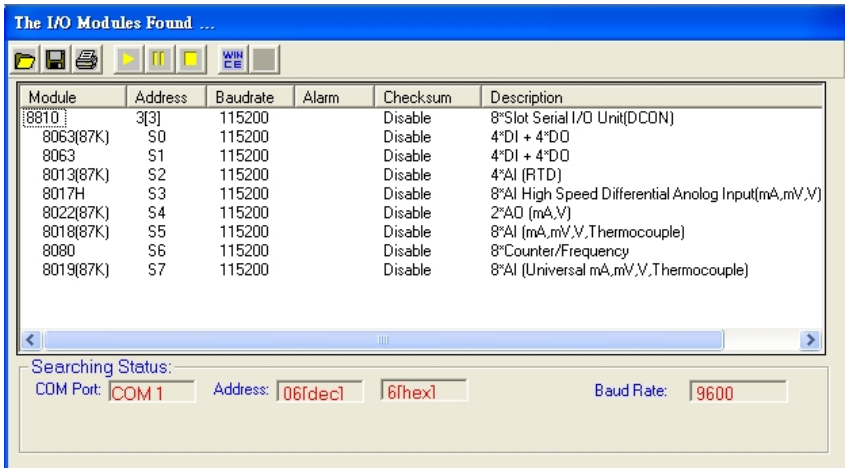


3.2.4 The differences between i-8K and i-87K I/O modules:

The DCON firmware (DCON_nnn.exe,E10M_nnn.exe) supports both 8K and 87K series I/O modules. The two series I/O modules can be plug in same I-8000 MCU. The modules for DI, DO, DIO, AI, AO and Counter/Frequency are supported. Other modules such as multi-serial port (8112, 8144, 8142, 8144), MMC(8073), motion (8090, 8091) are not supported. The file in the shipped CD lists details.

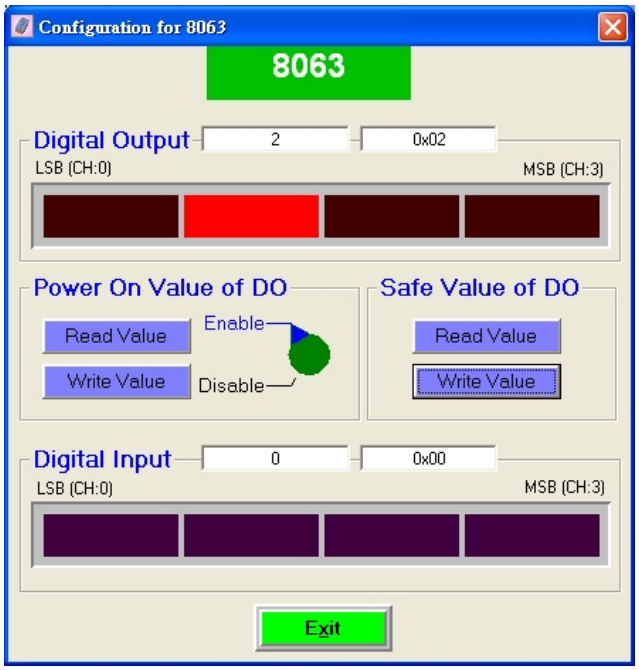
CD:\Napdos\Driver\DCON_Utility\DCON_Utility_Module_List.htm

The DCON firmware only accepts 4 digits numbers. Thus both 8K and 87K series are recognized as 4 digits numbers. When using the DCON Utility to search I/O modules, the screen shown as following:

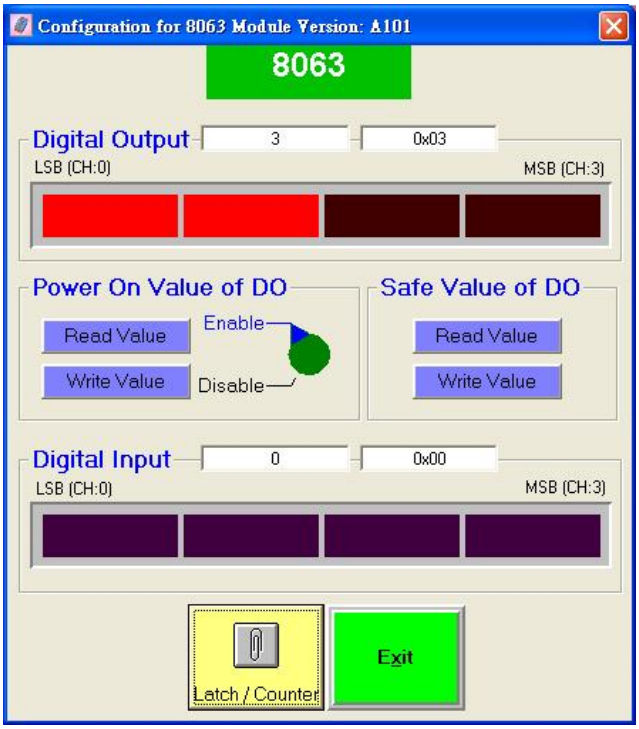

The I/O Modules Found ...
Module
Address
Baudrate
Alarm
Checksum
Description
8810 3[3] 115200 Disable 8*Slot Serial I/O Unit(DCON)
8063(87K) S0 115200 Disable 4*DI + 4*DO
8063 S1 115200 Disable 4*DI + 4*DO
8013(87K) S2 115200 Disable 4*AI (RTD)
8017H S3 115200 Disable 8*AI High Speed Differential Anolog Input(mA,mV,V)
8022(87K) S4 115200 Disable 2*AO (mA,V)
8018(87K) S5 115200 Disable 8*AI (mA,mV,V,Thermocouple)
8080 S6 115200 Disable 8*Counter/Frequency
8019(87K) S7 115200 Disable 8*AI (Universal mA,mV,V,Thermocouple)
Searching Status:
COM Port: COM 1
Address: 06[dec] 6[hex]
Baud Rate: 9600

3.2.5 To Configure Digital I/O modules on i-8000 system:

Both i-8K DO modules and i-87K DO modules have DO Power On value and safe value and they are controlled by the CPU module of i-8000 system.



i-8063 on i-8000 system



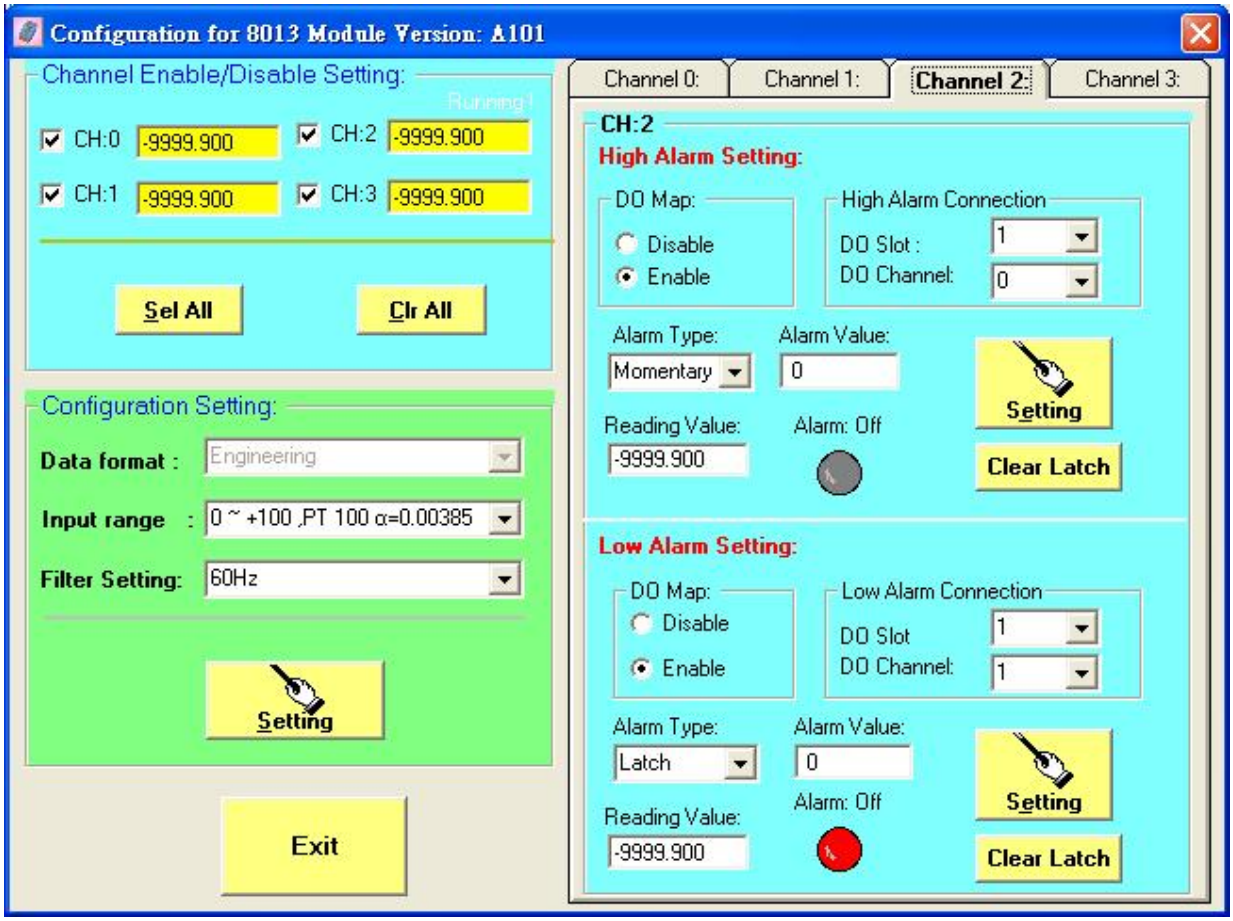
i-87063 on i-8000 system

But DI module of i-87K have DI counter and DI latch functions and i-8K DI modules do not.

The DI counter and latch functions of i-87063 on i-8000 system.

3.2.6 To Configure Analog Input modules on i-8000 system:

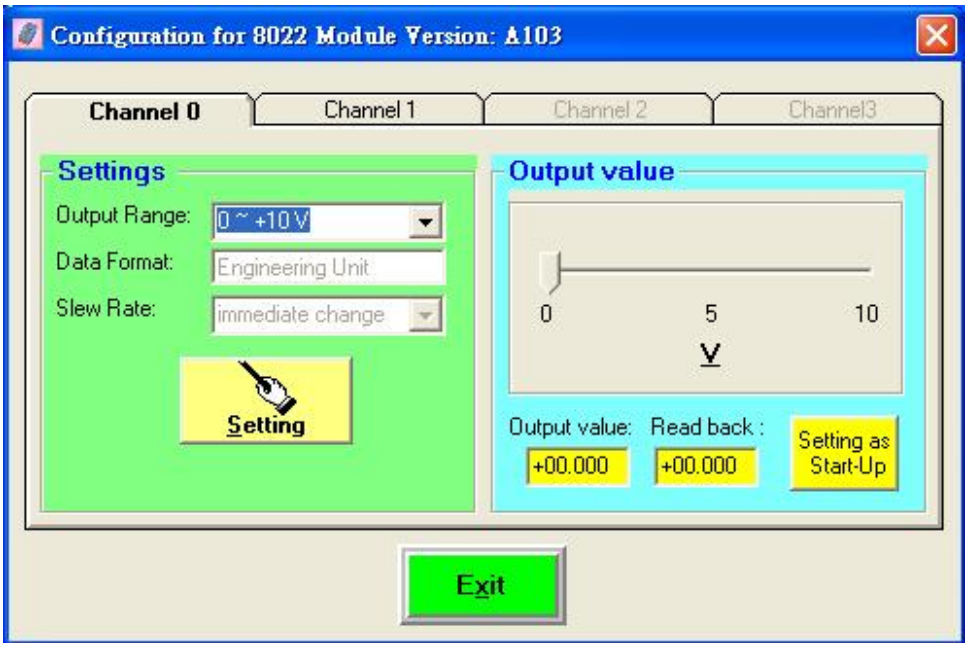
The analog input module on i-8000 system have an advantage in DO Alarm mapping, they can have their alarm output map to any slot of DO module (must less then or equal to16 bits DO) for each channel of Analog input, the firmware will auto scan the Analog input modules and auto trigger the DO alarm output.
The data format of all the Analog input modules on i-8000 system support only engineering format, i-8000 system does not support hex format and percent format.



i-87013 RTD input on i-8000 system

3.2.7 To Configure Analog Output modules on i-8000 system:

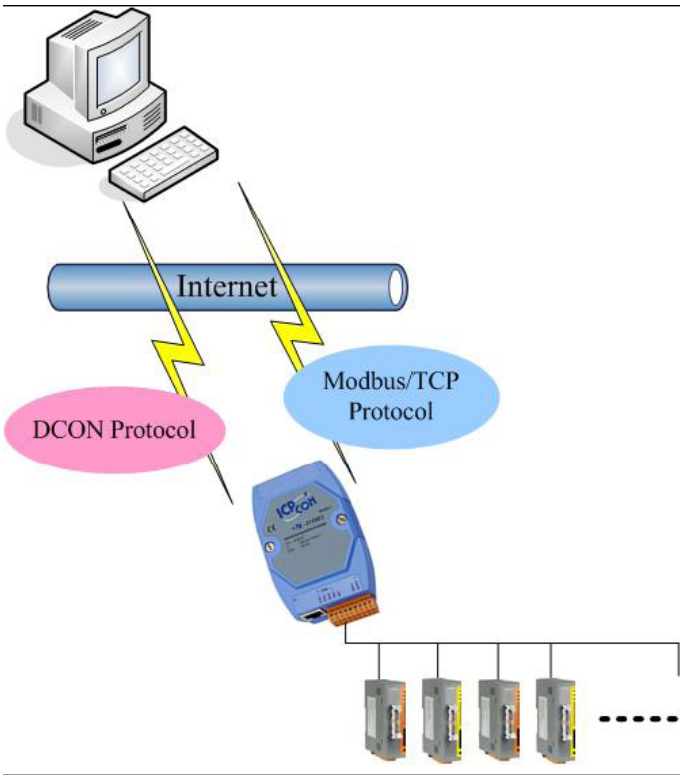
The analog output modules on i-8000 system can change their type code and setup their power on value, but not safe value.
The data format of analog output modules on i-8000 system support engineer format only.
The slew rate function also be disabled,

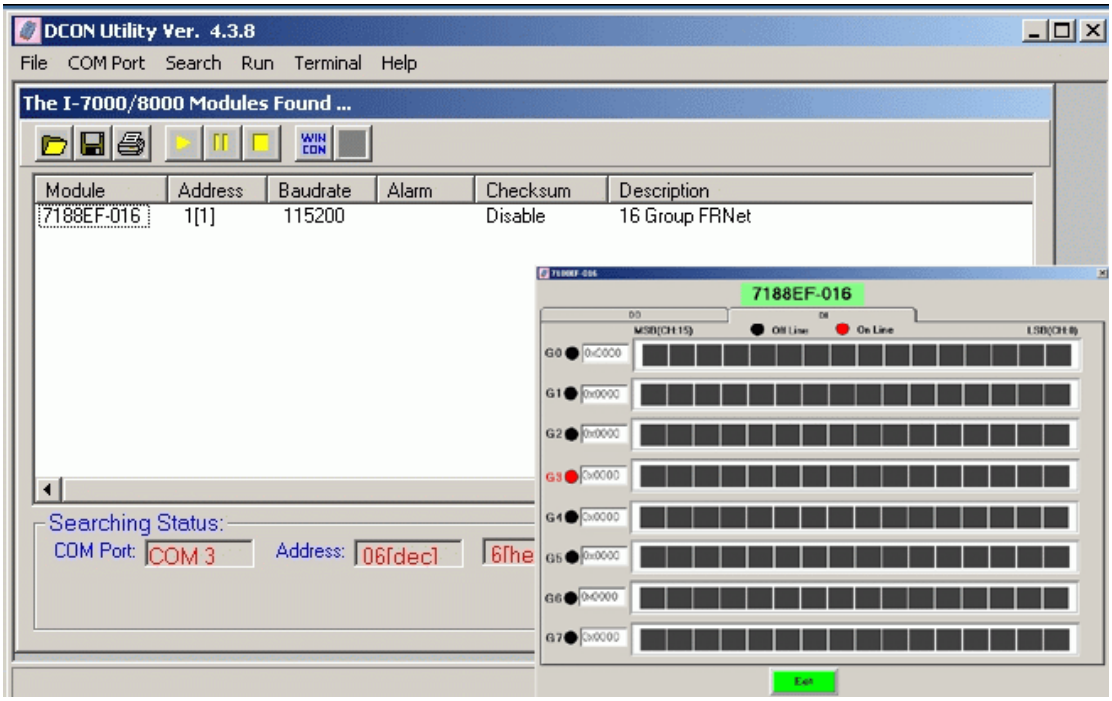


i-87022 on i-8000 system

3.3 Configure i-7188EF-016 with DCON Utility:

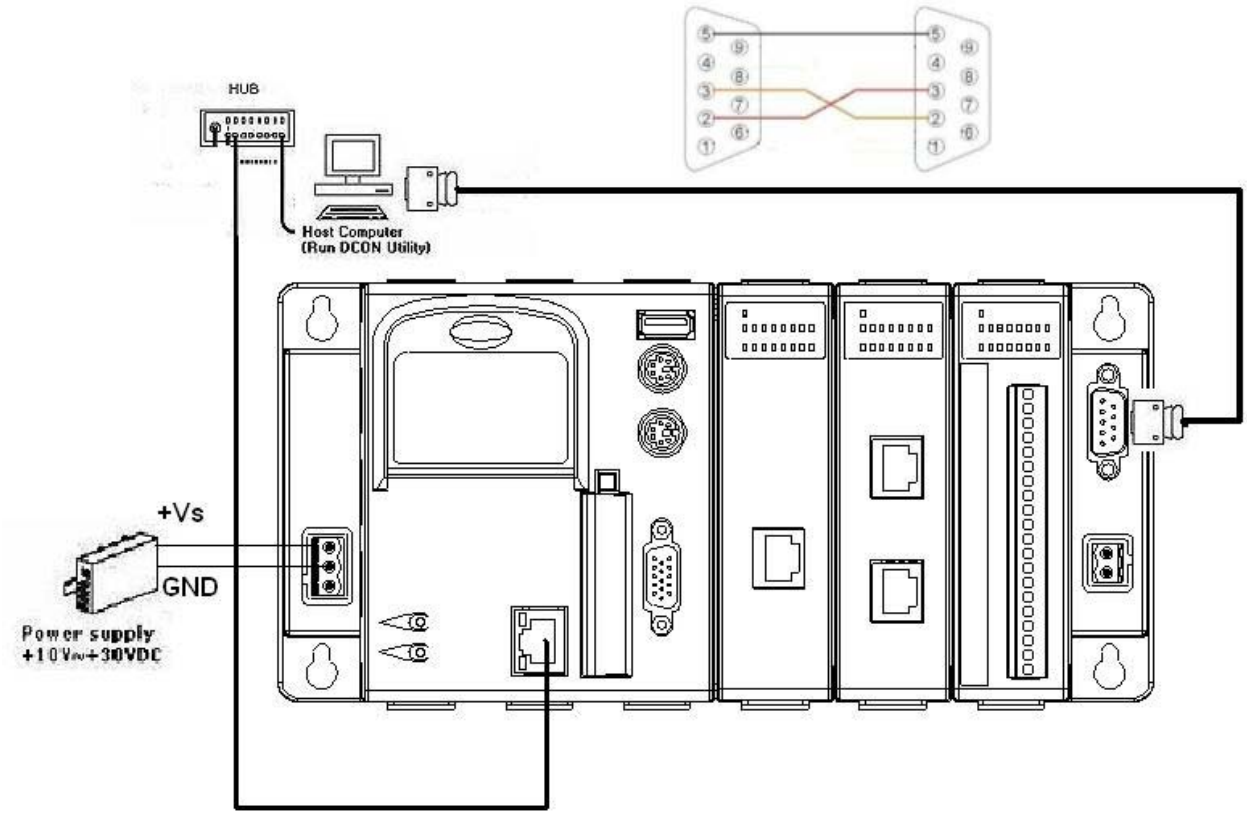
i-7188EF-016 is an Ethernet I/O units running DCON Firmware **EF016nnn.exe**, it can support maximum 128 bits DI and 128 bits DO, the **only address is 1** and there is no need to configure the i-7188EF-016 Ethernet I/O unit.



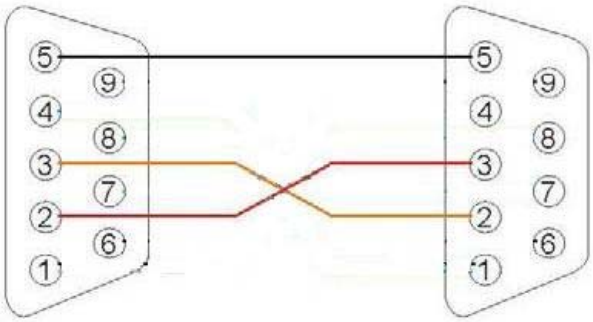

DCON Utility Ver. 4.3.8
File COM Port Search Run Terminal Help
The I-7000/8000 Modules Found ...
Module Address Baudrate Alarm Checksum Description
7188EF-016 1[1] 115200 Disable 16 Group FRNet
7188EF-016
Searching Status:
COM Port: COM 3
Address: 06[dec]

3.4 Configure i-87K I/O modules on WinCon with DCON Utility:

When i-87K I/O modules applied to the WinCon system, DCON Utility can also help user to configure the I/O especially for AI, AO and Counter/Frequency modules.



Note : The wire connection between WinCon's COM2 and PC's COM port is the most asked question when using DCON Utility to configure i-87K I/O modules which are inserted into the WinCon.



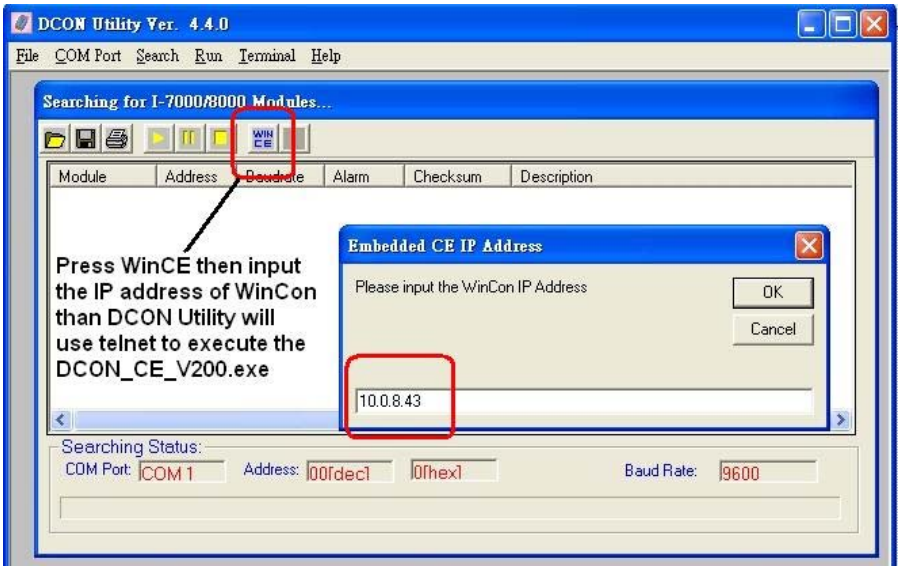
Please note the crossover between
pin2 and pin3 of the COM port connecter

DCON Utility can not search WinCon directly, it needs some steps to achieve the mission.

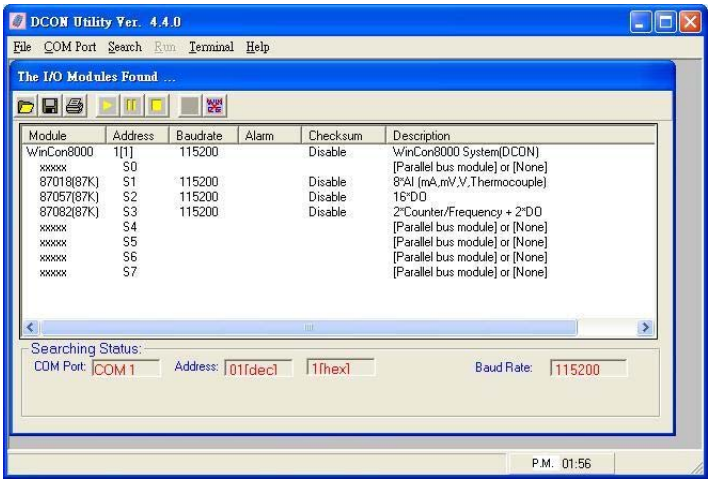
Step 1: Check Compact Flash Card of the WinCon Controller and make sure the DCON_CE_V200.exe is located at the path **CompactFlash\ICPDAS\Tools** or **Compact Flash\ICPDAS\Tools\.**

Note: If there is no such a file at the Flash Card, it can download from the web site below.
http://www.icpdas.com/products/PAC/wincon-8000/Download/download_Compact%20Flash.htm

Step 2: Click button and input the IP address of the WinCon.
It needs to use telnet protocol to execute the **DCON_CE_V200.exe** and to configure i-87K I/O module.


DCON Utility Ver. 4.4.0
File COM Port Search Run Terminal Help
Searching for I-7000/8000 Modules...
Module Address Baudrate Alarm Checksum Description
Press WinCE then input the IP address of WinCon than DCON Utility will use telnet to execute the DCON_CE_V200.exe
Embedded CE IP Address
Please input the WinCon IP Address
OK
Cancel
10.0.8.43
Searching Status:
COM Port: COM 1
Address: 00[dec] 0[hex]
Baud Rate: 9600

Step 3: Click button to Search the i-87K modules.
When DCON_CE_V200.exe has been executed, DCON Utility needs to use COM port cable to connect to the WinCon's COM2 (RS-232) in order to search and to configure i-87K I/O modules.


DCON Utility Ver. 4.4.0
File COM Port Search Run Terminal Help
The I/O Modules Found ...
Module Address Baudrate Alarm Checksum Description
WinCon8000 1[1] 115200 Disable WinCon8000 System(DCON)
xxxxx S0 [Parallel bus module] or [None]
87018(87K) S1 115200 Disable 8*AI (mA,mV,V,Thermocouple)
87057(87K) S2 115200 Disable 16*DO
87082(87K) S3 115200 Disable 2*Counter/Frequency + 2*DO
xxxxx S4 [Parallel bus module] or [None]
xxxxx S5 [Parallel bus module] or [None]
xxxxx S6 [Parallel bus module] or [None]
xxxxx S7 [Parallel bus module] or [None]
Searching Status:
COM Port: COM 1
Address: 01[dec] 1[hex]
Baud Rate: 115200
P.M. 01:56

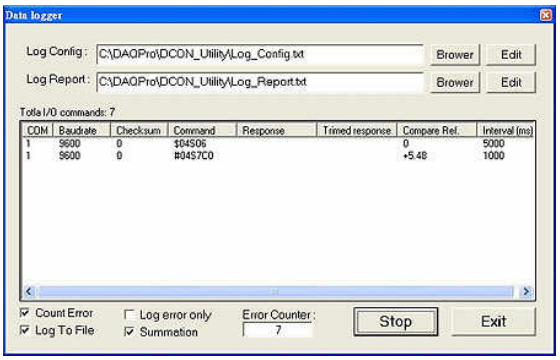
Note: DCON Utility only support i-87K I/O module on WinCon.

For using DCON_CE_V200.exe and wire connection of WinCon's COM2 with PC, please refer to
ftp://ftp.icpdas.com/pub/cd/winconcd/napdos/WinCE/User%20Manual/ or
WinCon CD:\Napdos\WinCE\User Manual\WinCON Getting Started 1.4.pdf
(2.3 I-87K Module Settings)

Chapter4. Tools of DCON Utility

4.1 Data Log function:

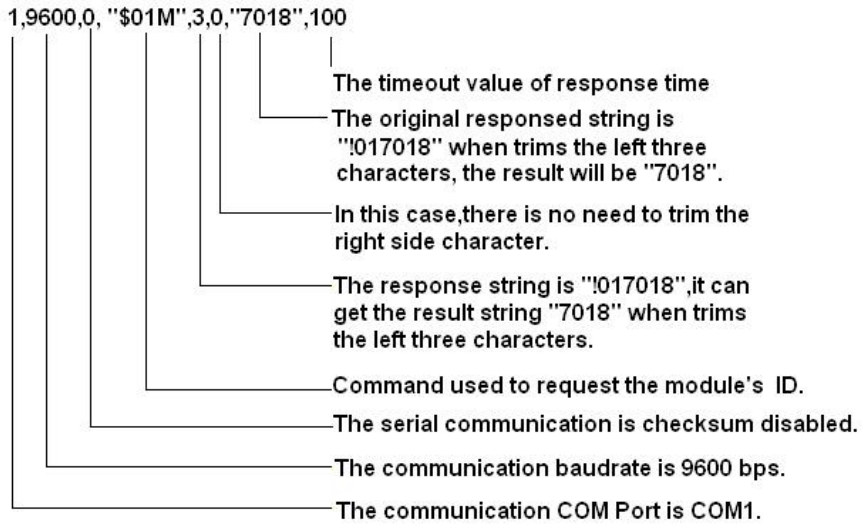
This function is a simple tool to have data log report.

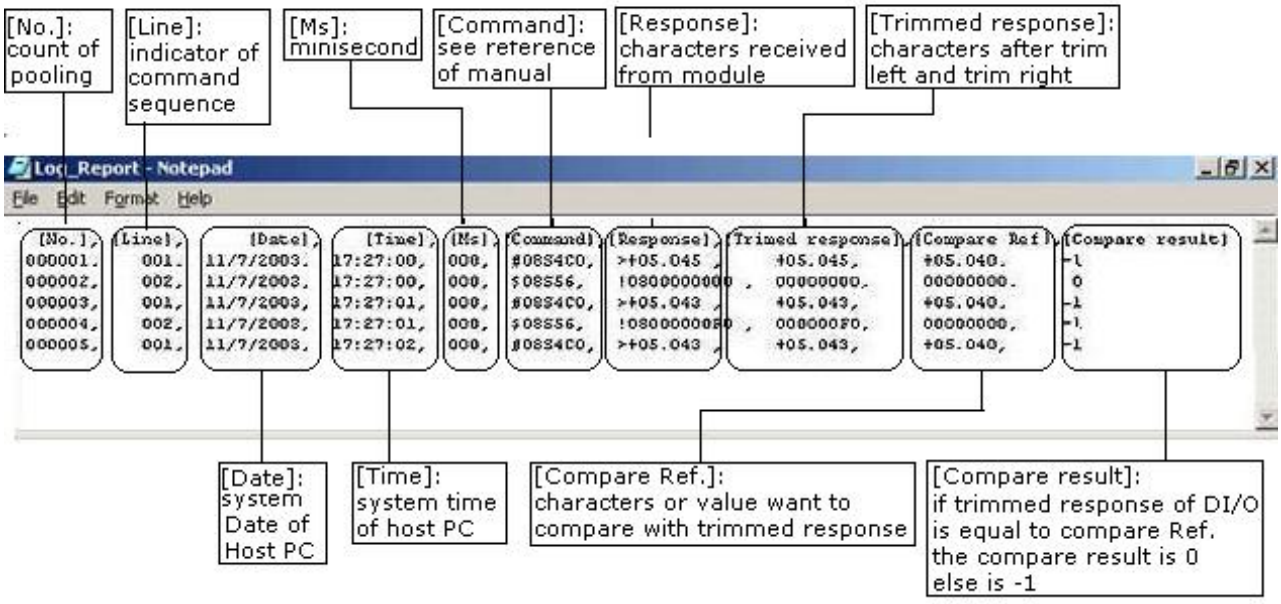


4.1.1 Edit the Log_Config.txt

```
/*
The documet is a configure file to let the Utility send specific
command string to the moudles and log the communication packages
to the report file.
The parameters are:
[COM],[Baudrate],[Checksum],[Command],[Left trim],[Right trim],[Compare Ref.],[Time interval]

[COM]:           1 ~ 255
[Baudrate]:      1200,2400,4800,9600,19200,38400,57600,115200
[Checksum]:      0 ==> disable
                 1 ==> enable
[Command]:       command string that will be sent to the I/O modules.
[Left trim]:     trims how many bytes of the left of the received string.
[Right trim]:    trims how many bytes of the right of the received string.
[Compare Ref.]:  referance string used to compare the trimmed response string.
[Time interval]: time interval to run the command.
                 unit: ms

Please change it to suit your hardware configuration.
[Oct,9,2003] by Kevin

Note 1: The config file is used from DCON Utility 4.2.7.
Note 2: The document is termniated by one '*' and one '/'.
*/
  1,9600,0, "$01M",0,0,"!017018",100
```

It needs to put right parameters to get right response records from modules,


1,9600,0, "$01M",3,0,"7018",100
The timeout value of response time
The original responsed string is "!017018" when trims the left three characters, the result will be "7018".
In this case,there is no need to trim the right side character.
The response string is "!017018",it can get the result string "7018" when trims the left three characters.
Command used to request the module's ID.
The serial communication is checksum disabled.
The communication baudrate is 9600 bps.
The communication COM Port is COM1.


[No.]: count of pooling
[Line]: indicator of command sequence
[Ms]: minisecond
[Command]: see reference of manual
[Response]: characters received from module
[Trimmed response]: characters after trim left and trim right
Log_Report - Notepad
File Edit Format Help
[No.], [Line], [Date], [Time], [Ms], [Command], [Response], [Trimed response], [Compare Ref], [Compare result]
000001, 001, 11/7/2003, 17:27:00, 000, $08S4C0, >+05.045, +05.045, +05.040, -1
000002, 002, 11/7/2003, 17:27:00, 000, $08S56, !0800000000, 00000000, 00000000, 0
000003, 001, 11/7/2003, 17:27:01, 000, $08S4C0, >+05.043, +05.043, +05.040, -1
000004, 002, 11/7/2003, 17:27:01, 000, $08S56, !0800000050, 00000050, 00000000, -1
000005, 001, 11/7/2003, 17:27:02, 000, $08S4C0, >+05.043, +05.043, +05.040, -1
[Date]: system Date of Host PC
[Time]: system time of host PC
[Compare Ref.]: characters or value want to compare with trimmed response
[Compare result]: if trimmed response of DI/O is equal to compare Ref. the compare result is 0 else is -1

example1.

If we have an i-8810 MCU at Address 08 and an i-8041 DI module at Slot 05 on MCU

We use $08S56 to read I/O Status and get response !0800000000

All we want from the response is the I / O Status 00000000

so we have to trim left 3(!08) from !0800000000 to get 00000000

example2.

If I/O status has been changed we can use Compared Ref. 00000000

If I/O status has been changed to 000000F0 then Compared result is -1

If no change then Compared result is 0

example3.

If we have an i-8810 MCU at Address 08 and an i-8017H AI module at Slot 04 on MCU

We use #08S4C0 to read Analog input at channel 0 and the response format is >+05.048

if we want to trim off the ">" character

then we set Left trim 1 and Right trim 0 to get +5.048 format

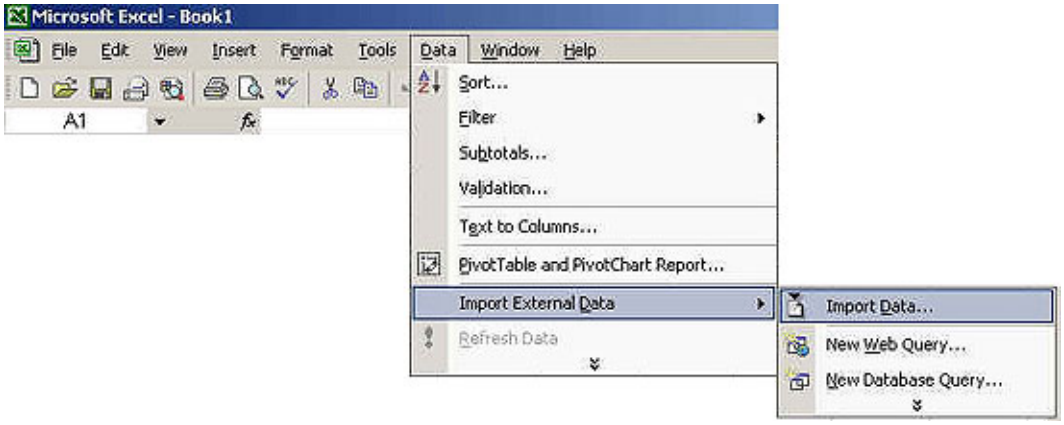
4.1.2 Use EXCEL to Import the data of Log_Report.txt

In some situation user would want to transfer Log_Report to excel file

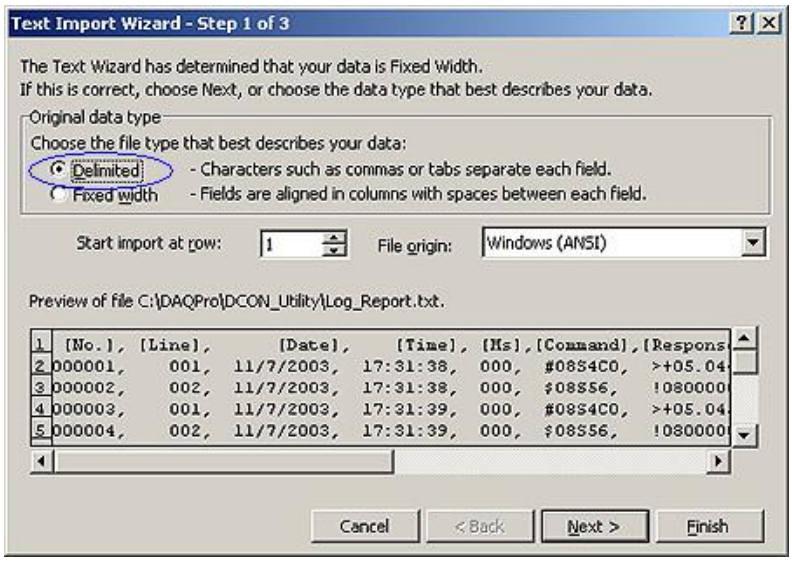
The procedure below will show how to do it

1. Execute Excel.exe

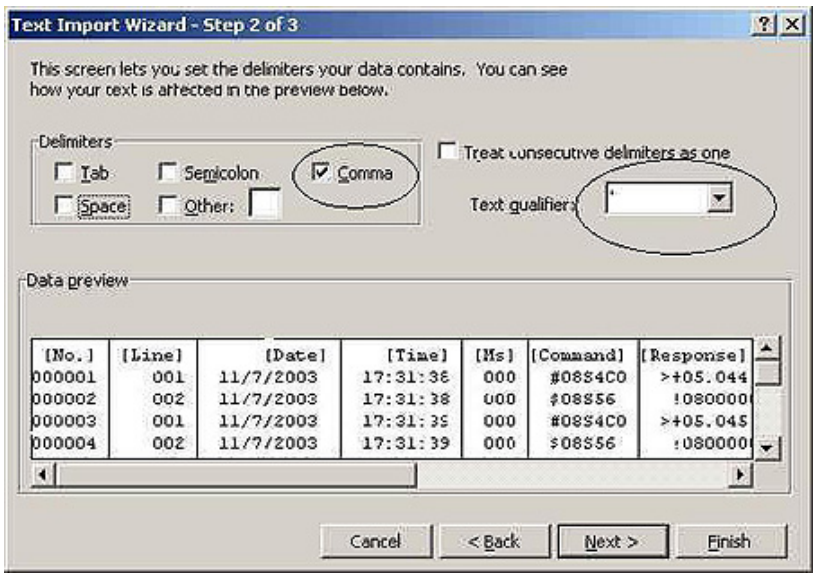
2. Data ->Import External Data ->Import Data



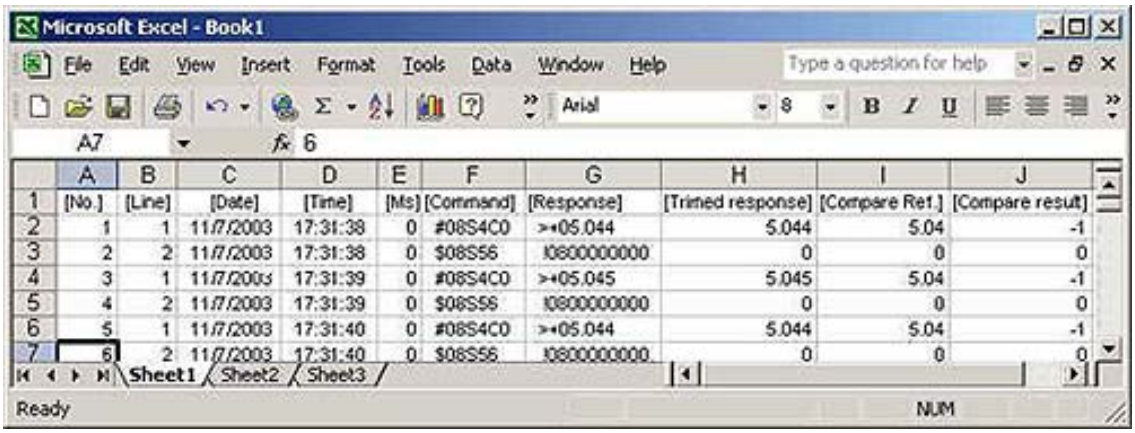
3. Select **"Delimit"**


Text Import Wizard - Step 1 of 3
The Text Wizard has determined that your data is Fixed Width.
If this is correct, choose Next, or choose the data type that best describes your data.
Original data type
Choose the file type that best describes your data:
Delimited - Characters such as commas or tabs separate each field.
Fixed width - Fields are aligned in columns with spaces between each field.
Start import at row: 1
File origin: Windows (ANSI)
Preview of file C:\DAQPro\DCON_Utility\Log_Report.txt.
1 [No.], [Line], [Date], [Time], [Ms],[Command],[Respons
2 000001, 001, 11/7/2003, 17:31:38, 000, #08S4C0, >+05.04
3 000002, 002, 11/7/2003, 17:31:38, 000, $08S56, !080000
4 000003, 001, 11/7/2003, 17:31:39, 000, #08S4C0, >+05.04
5 000004, 002, 11/7/2003, 17:31:39, 000, $08S56, !080000
Cancel
< Back
Next >
Finish

4. Select **"Comma"** as delimit

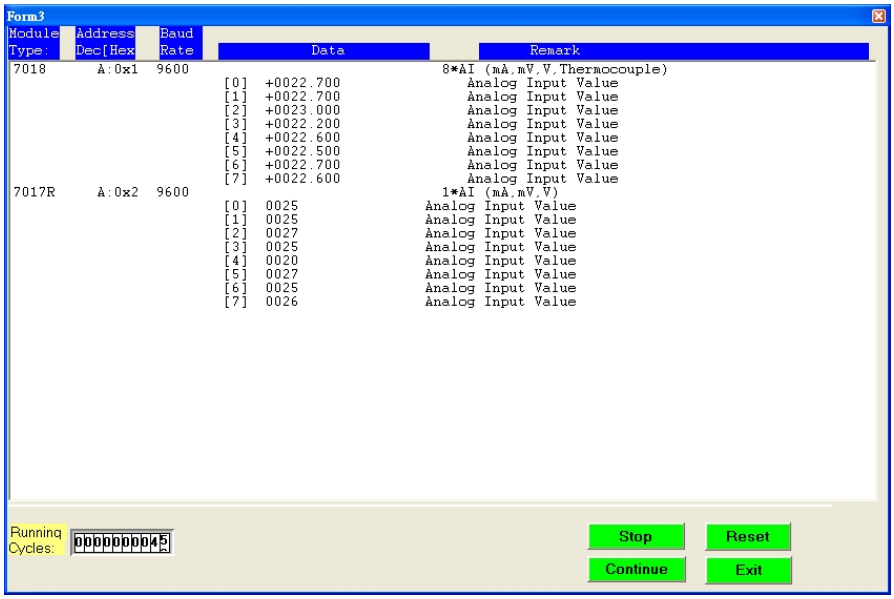

Text Import Wizard - Step 2 of 3
This screen lets you set the delimiters your data contains. You can see how your text is affected in the preview below.
Delimiters
Tab
Semicolon
Comma
Space
Other:
Treat consecutive delimiters as one
Text qualifier:
Data preview
[No.] [Line] [Date] [Time] [Ms] [Command] [Response]
000001 001 11/7/2003 17:31:38 000 #08S4C0 >+05.044
000002 002 11/7/2003 17:31:38 000 $08S56 !080000
000003 001 11/7/2003 17:31:39 000 #08S4C0 >+05.045
000004 002 11/7/2003 17:31:39 000 $08S56 !080000
Cancel
< Back
Next >
Finish

5. Click **"Finish"** and get the result

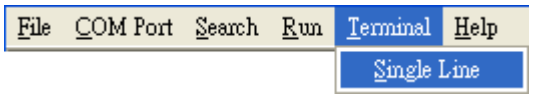


4.2 Monitoring function:

When finish searching and configuring the module, the monitor function can pooling every module one by one and show the results.

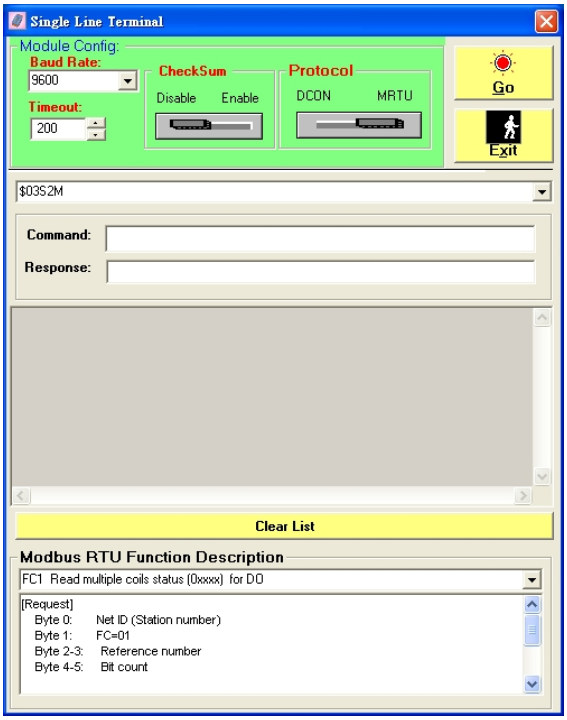


4.3 Terminal Single Line function:



This is a basic tool for user to test and debug the command.

It supports both DCON Protocol and Modbus RTU Protocol.



The first step user must know the communication settings of target module.

The second step is to look for the commands on user manual.

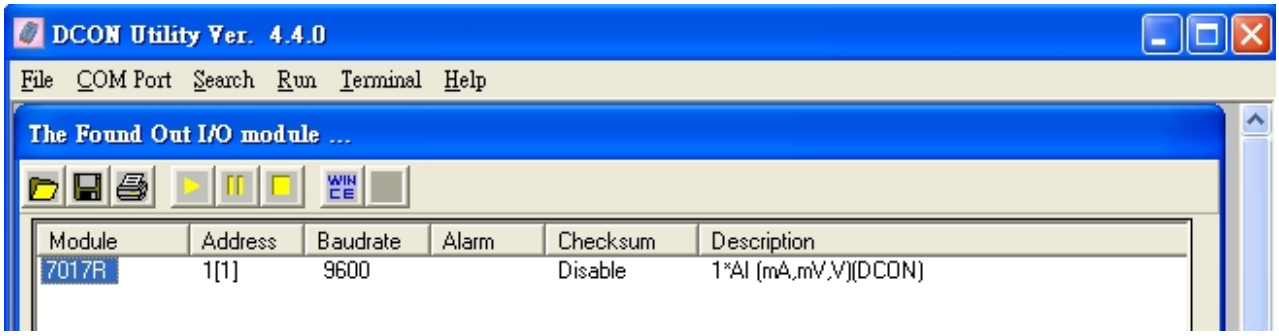
For I-8000 series modules the files are located at:
CD:\ Napdos\DCON\IO_Module\hw_dcon_on_8KUnit\8k
ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/dcon/io_module/hw_dcon_on_8kunit/8k/

For I-87K series modules the files are located at:
CD:\ Napdos\DCON\IO_Module\hw_dcon_on_8KUnit\87k
ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/dcon/io_module/hw_dcon_on_8kunit/87k/

For i-7K and M-7K series modules, please refer to
CD:\ Napdos\7000\Manual\
ftp://ftp.icpdas.com/pub/cd/8000cd/napdos/7000/manual/

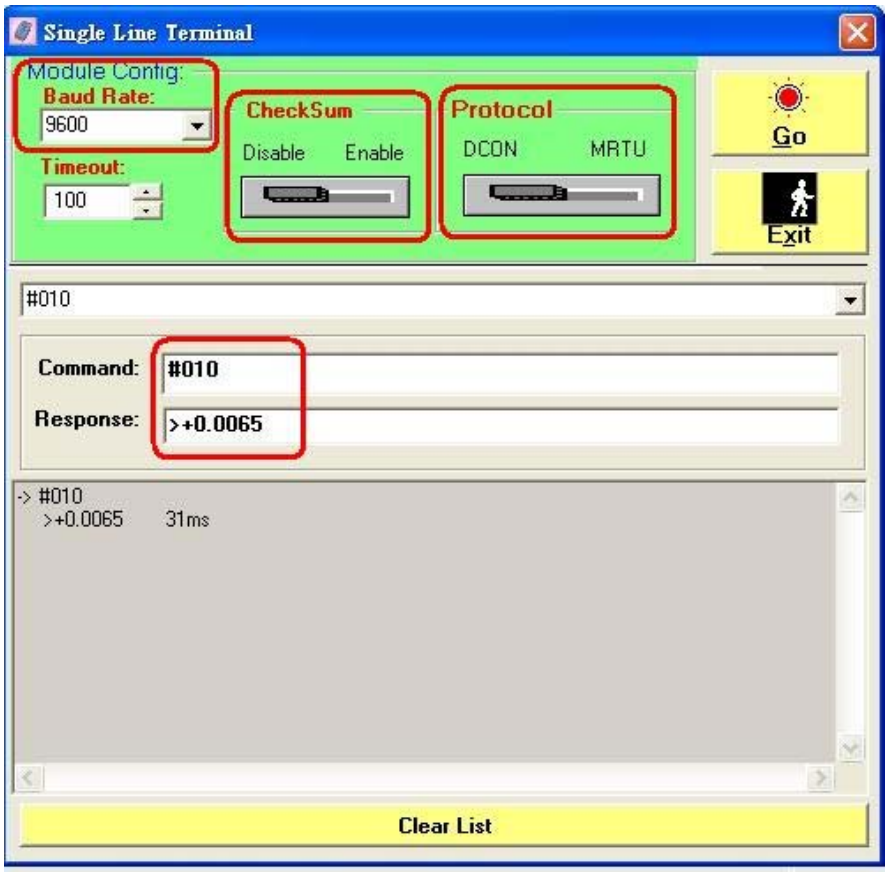
Example 1:

If there is a 7017R with the net address 01, baud rate 9600, checksum disable and DCON protocol.


DCON Utility Ver. 4.4.0
File COM Port Search Run Terminal Help
The Found Out I/O module ...
Module Address Baudrate Alarm Checksum Description
7017R 1[1] 9600 Disable 1*AI (mA,mV,V)(DCON)

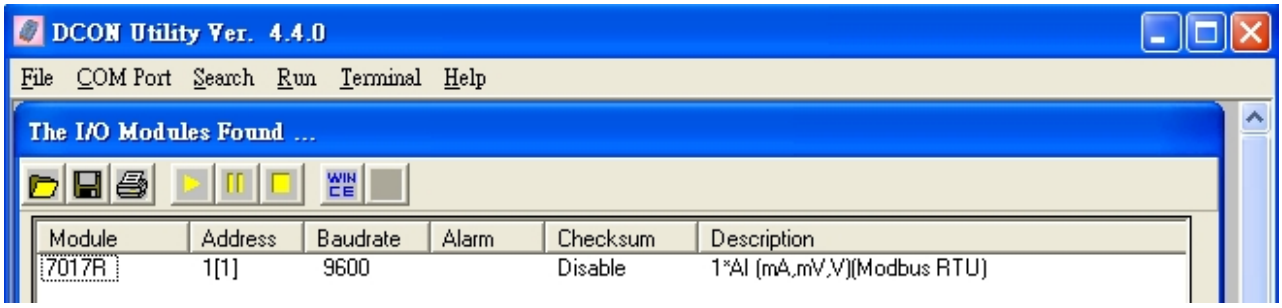
It can use #010 to read the AI values of channel 0.

The response of i-7017R is “>+0.0065”



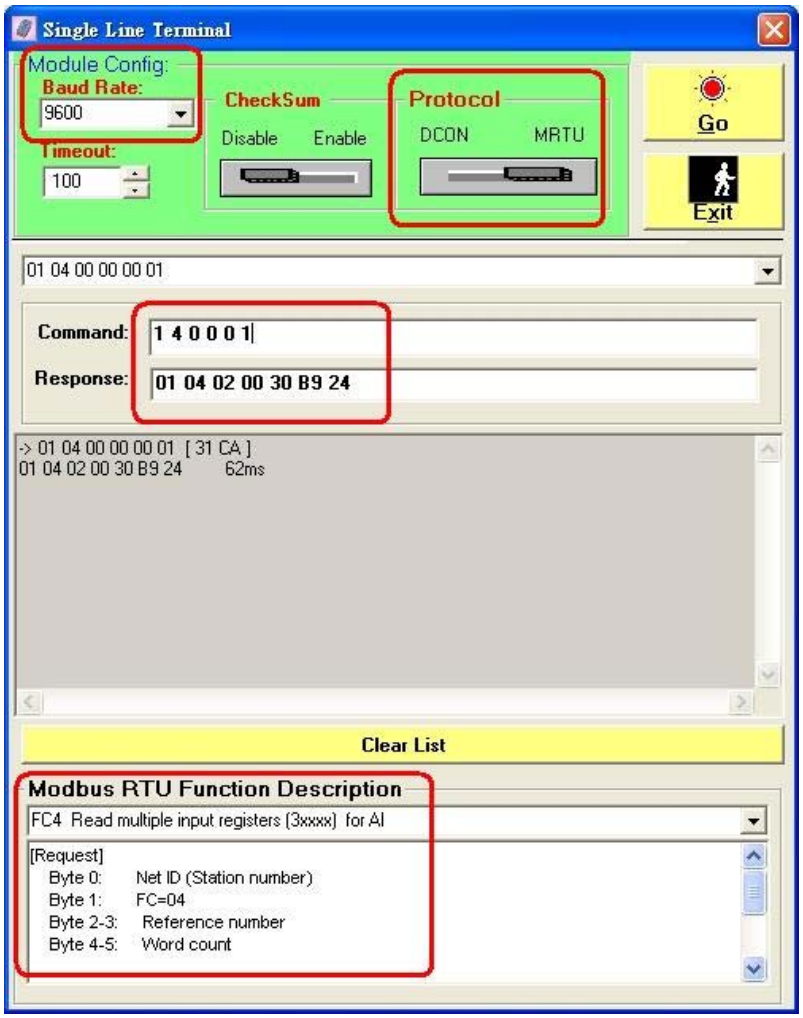
Example 2:

If there is a 7017R with the net address 01, baud rate 9600 and Modbus protocol.


DCON Utility Ver. 4.4.0
File COM Port Search Run Terminal Help
The I/O Modules Found ...
Module Address Baudrate Alarm Checksum Description
7017R 1[1] 9600 Disable 1*AI (mA,mV,V)(Modbus RTU)

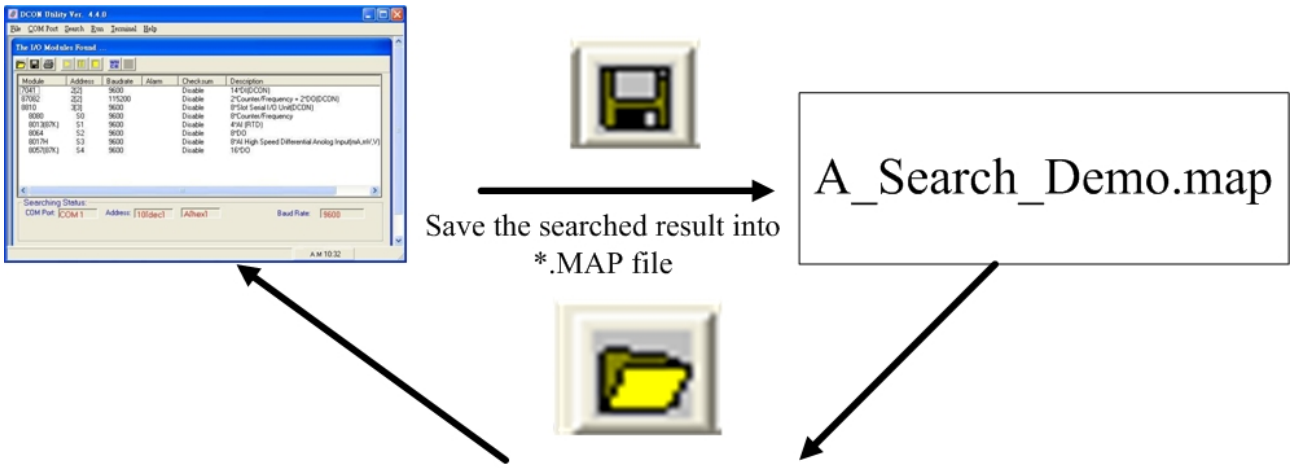
If wants to read AI value of channel 0, then it can look up to the description of Modbus command.

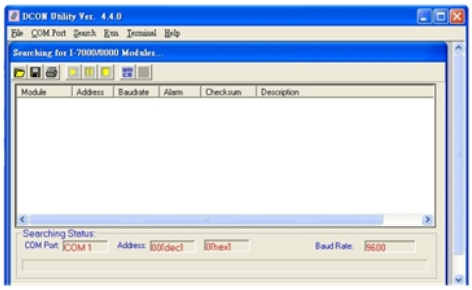
Then it can use 1 4 0 0 0 1 to read the AI value of channel 0 and
get the value 01 04 02 **00 30** B9 24



4.4 Save Map, Open Map and Print Map function:

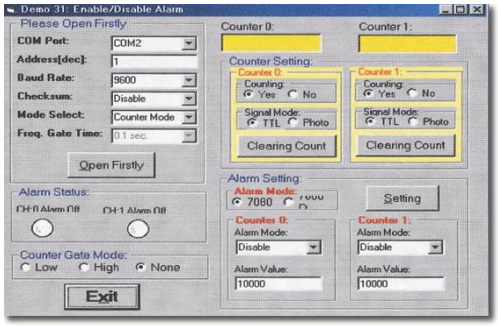
When the network contents many modules and need long time to search, it can save the search result into a map file, it will be very convenient to open map directly to load the previous result to searched form without searching time.





It also can print the searched result by using Print Map function.

Chapter5. DCON Protocol and Software Development ToolKit (free)



DCON DLL

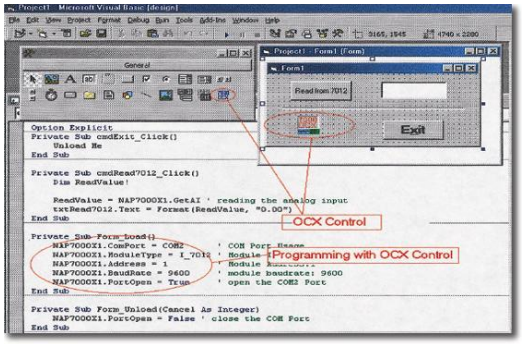
DLL library

Supported modules:
i-7000/8000/87K series
(with DCON protocol)

Supported demos:
VB/VC/BCB/Delphi

Supported OS:
Windows 98/NT/2K/XP

File location:
CD:\Napdos\Driver\DCON_DLL



DCON ActiveX

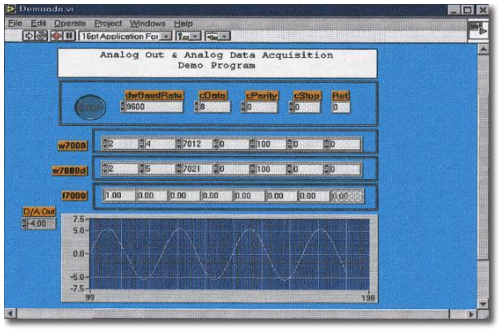
ActiveX (ocx) component

Supported modules:
i-7000/8000/87K series
(with DCON protocol)

Supported demos:
VB/VC/BCB/Delphi

Supported OS:
Windows 98/NT/2K/XP

File location:
CD:\Napdos\Driver\DCON_ActiveX



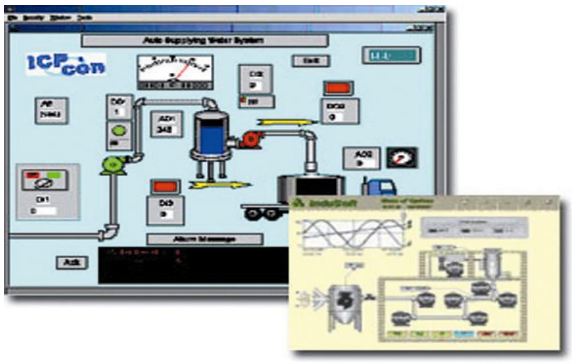
DCON LabVIEW

Bundled driver for LabVIEW

Supported modules:
i-7000/8000/87K series
(with DCON protocol)

Supported OS:
Windows 98/NT/2K/XP

File location:
CD:\Napdos\Driver\DCON_Labview

<table>
<tr>
<td>  </td>
<td>DCON Indusoft
Supported Module:
i-7000/8000/87K series
(with DCON protocol)
Supported OS:
Windows 98/NT/2K/XP/CE
File location:
CD:\Napdos\Driver\DCON_Indusoft</td>
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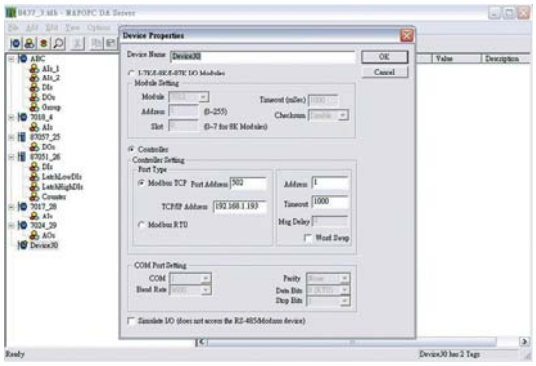
<tr>
<td>  </td>
<td>NAP OPC server
Supported module:
i-7000/8000/87K series
(with DCON protocol)
Modbus embedded controller
ISaGRAF embedded controller
Supported OS:
Windows 98/NT/2K/XP/CE
File location:
CD:\Napdos\NapOPCSvr</td>
</tr>
</table>